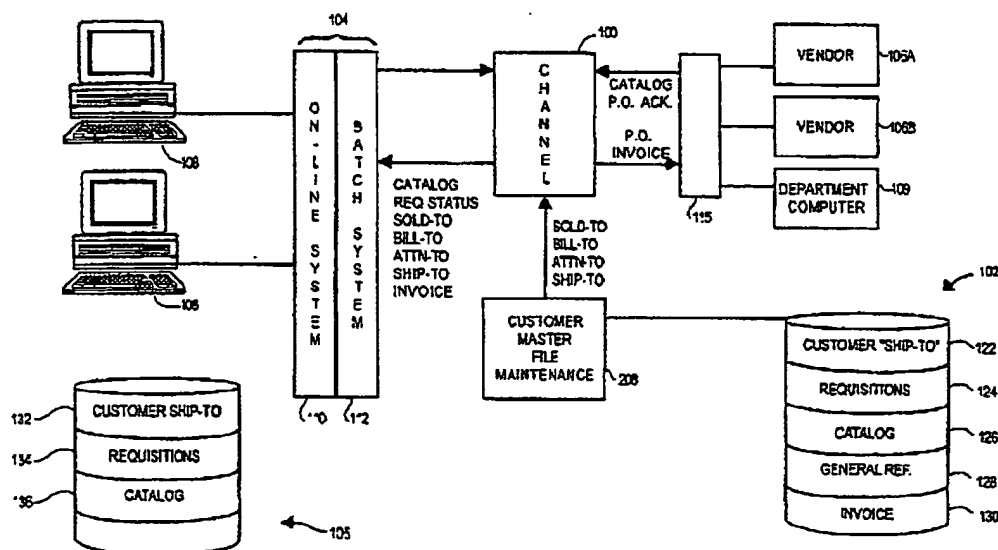




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>5</sup> : G06F 15/22, 15/24		A1	(11) International Publication Number: WO 94/28497
			(43) International Publication Date: 8 December 1994 (08.12.94)
(21) International Application Number: PCT/US94/05046		(81) Designated States: AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, GE, HU, JP, KG, KP, KR, KZ, LK, LV, MD, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, TJ, TT, UA, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 9 May 1994 (09.05.94)			
(30) Priority Data: 063,755 20 May 1993 (20.05.93) US			
(71) Applicant: MOORE BUSINESS FORMS, INC. [US/US]; 300 Lang Boulevard, Grand Island, NY 14072-1697 (US).		Published With international search report. With amended claims.	
(72) Inventors: DOYLE, John, D.; 828 South Fourth Avenue, Libertyville, IL 60048 (US). HOHOLIK, Anthony, P.; 16713 Orchard Valley Drive, Gurnee, IL 60031 (US). GROTH, Dennis, P.; 324 Quist Court, Grayslake, IL 60030 (US).			
(74) Agent: NELSON, Jeffrey, H.; Nixon & Vanderhye, 8th floor, 1100 North Glebe Road, Arlington, VA 22201-4714 (US).			

(54) Title: COMPUTER INTEGRATION NETWORK FOR CHANNELING CUSTOMER ORDERS THROUGH A CENTRALIZED COMPUTER TO VARIOUS SUPPLIERS



## (57) Abstract

An electronic requisitioning system for channeling customer requisition orders to internal suppliers (109) and outside vendors (106a, 106b), and processing invoices using a centralized computer system (100). A customer accesses an electronic item catalog (126) and requisition form to place an order transmitted to the central computer system. Requisitions are segregated by supplier and sent as purchase orders to appropriate internal suppliers and outside vendors that ship the items directly to the customer. Invoices are centrally processed and the customer receives a combined invoice (130) for all item requisitions and may transmit payment back through to the central computer system.

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SI	Slovenia
CI	Côte d'Ivoire	LI	Liechtenstein	SK	Slovakia
CM	Cameroon	LK	Sri Lanka	SN	Senegal
CN	China	LU	Luxembourg	TD	Chad
CS	Czechoslovakia	LV	Latvia	TG	Togo
CZ	Czech Republic	MC	Monaco	TJ	Tajikistan
DE	Germany	MD	Republic of Moldova	TT	Trinidad and Tobago
DK	Denmark	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	US	United States of America
FI	Finland	MN	Mongolia	UZ	Uzbekistan
FR	France			VN	Viet Nam
GA	Gabon				

**COMPUTER INTEGRATION NETWORK FOR CHANNELING  
CUSTOMER ORDERS THROUGH A CENTRALIZED COMPUTER  
TO VARIOUS SUPPLIERS**

**FIELD OF INVENTION**

This invention relates to data processing for handling the ordering, order tracking and accounting of supplies. In addition, this invention relates to a centralized computer network for handling customer orders in conjunction with a variety of outside suppliers.

**BACKGROUND AND SUMMARY OF THE INVENTION**

FIGURE 1 is a simplified schematic diagram of a typical channel flow system 10 for handling customer orders, delivery of goods, and the accounting for the orders and deliveries in a typical transaction for the ordering of office supplies. The customer 12 completes a hand written order form 14 for several different types of office supplies. This completed order form is forwarded to a central supplier "X" 16.

The central supplier processes the customer order by splitting the one completed customer order form into information for individual vendors and prepares several vendor order forms 18, 20, 22, and 24 for the various office supplies that the customer has ordered. For example, the customer may have ordered printer ink that is not stocked by the central supplier. The order for printer ink is placed on another order form and sent by facsimile to an outside vendor such as XYZ office supply 18.

Similarly, an order for non-stocked business envelopes may be routed to the ABC envelope company 20.

The customer requisition orders 14 for supplies that are stocked by the central supplier 16 are entered 21 in the data processing system for that supplier. This data processing system routes the order to the appropriate departments, such as a custom forms warehouse 22 and a stock forms warehouse 24.

Each of the outside vendors and departments ships 26 the ordered products directly to the customer 12. The outside vendors submit separate invoices 28 for each completed order to a central invoicing service 30. Similarly, the departments route invoices electronically to the central invoice service via the data processing system for the central supplier. The central invoicing service prepares and submits itemized invoices 32 for all of the delivered products to the customer. The customer submits payment 33 to the central invoicing service which in turn pays the outside vendors and departments for the delivered products.

A copy of the customer invoice is also sent to a central customer assistance department 34 of the central supplier 16. This customer assistance department collects data on customer orders, delivery of orders 35 and invoicing for delivered products in a central database 36. This database is used to respond to customer inquiries 38 regarding pending

orders and provides a capability for cancelling and changing pending orders 40. In addition, this database allows for the generation of reports regarding the flow of orders, deliveries and payment which is used by the customers, central suppliers and outside vendors to perform their respective tasks.

The current channel processing system is labor intensive in that data regarding orders and deliveries are repeatedly keyed into different computer systems at the customer, central supplier and outside vendors. This system is prone to data entry errors. The current system is redundant in data processing in that several different computer systems perform many of the same tasks, such as for status inquiry, invoicing, order entry and processing.

There is a long felt need for a data processing network to efficiently handle all aspects of customer orders channeled to a central supplier and filled by departments of the central supplier or by outside vendors. Such a channeled data processing system has been developed. The system includes a central computer located at the central supplier. This central computer is coupled, such as via modems, to computers at customer, department and outside vendor sites. These coupled computer systems in combination with the central computer form a data processing network capable of handling the data processing requirements for customer orders, routing those orders to appropriate departments or vendors, delivery of the ordered products, invoicing and payments, customer assistance and report generation.

### BRIEF DESCRIPTION OF THE DRAWINGS

The preferred embodiment of the invention is described in relation to the accompanying drawings. These drawings are as follows:

FIGURE 1 is a schematic diagram of a prior art channel system;

FIGURES 2 and 3 are block diagrams of an exemplary computer network for the subject invention;

FIGURES 4, 5, 8, 9 and 14 to 26 show flowcharts of an exemplary program for the present invention;

FIGURES 6, 7 and 10 to 13 show exemplary data display screens used with the present invention.

### DETAILED DESCRIPTION OF THE DRAWINGS

FIGURE 2 shows a block diagram of the data processing hardware used to implement the present invention. A mainframe computer 100, such as an IBM 3090 computer, located on site at the central supplier provides a centralized data processing for the entire channel supplier system 101. The mainframe computer includes communications hardware 102, such as modems, for communicating with customer computer systems 104(a-c) and outside vendor computer systems 106(a-b). In addition, the mainframe computer main communicates directly with department workstations 108 and supervisory workstations 110 of the central supplier.

The customer computer systems may be, for example, an individual personal computer 104a at a small customer, a computer network 104b at another customer, or a mini- or main-frame computer at a large customer 104c. Similarly, the outside vendor computer systems may be personal computers 106a or other type of computer system or network 106b. The workstations and/or computer systems for departments and supervisors may be, for example, computer terminals or personal computers on a network coupled to the mainframe computer. The communications hardware, software and protocols for coupling the mainframe computer with the workstations is conventional and well known to persons skilled in the art. In addition, the workstations and mainframe computer may be connected to bank computers to process electronic fund transfer information between customers, central supplier and outside vendors.

The mainframe computer executes a transaction software program described below to collect and process the data for customer order, shipment tracking and invoicing. This data is maintained 208 in a conventional database format for access by the transaction software and by conventional report generation software. In addition, the databases 102 include data on customers 122, customer requisitions 124, on supply catalog items 126, invoicing 130 and general reference data 128.

FIGURE 3 is a high-level block-diagram of the data processing flow in the system. On the mainframe computer 100 at the central supplier, the transaction

program 1000 (FIG. 4) is executed to centrally process the data in the system and maintain 208 databases 102. These central databases may include individual databases on the customer 122, e.g. ship-to information, pending requisitions 124, master product item catalog 126, general reference information 128 such as product class codes and product groups, and invoicing 130. Similar databases 106 can be maintained in each customer computer system 104 if the customer system is compatible with the central mainframe computer 100. Customer databases 106 contain information inputted at the customer workstations 108 and information periodically exchanged between the customer computer system 104 and the central supplier computer system 100.

Each customer computer system 104 performs on-line 110 and batch processing 112 operations. On-line operations generally occur when a customer user accesses the customer database 105 through a workstation 108. For example, the customer database contains information regarding the customer authorization and delivery locations, e.g. "ship to" information 132, pending requisition orders such as items ordered, quantity and price 134, and a copy of the portion of the product catalog accessible to that customers 136. The main product catalog 126 maintained in databases in the central computer 100 is massive and each customer, during a set up phase, selects the portion of the catalog that is to be accessible to its authorized users. An authorized customer employee logs onto the on-line sub-system

and interacts with customer databases in real time to order products, inquire into the status of pending requisitions, and browse and order directly from the catalog.

The data entered by the customer employee is stored in the customer database 106. The customer database and the main system databases 102 are periodically updated by operation of the batch processing system 112 operated on the customer computer system. A complementary batch process occurs on the main computer system.

The vendor computer systems 106 (A&B) and possibly with internal department computer systems 109, e.g., supply warehouse computer systems, interface with the main computer system 100 via a conventional interfacing equipment and software 115. The main computer system and the vendor system exchange data, such as purchase orders, purchase order acknowledgments and invoices in a standard formats, such as those established as Electronic Data Interchange (EDI) standards. In addition, the vendor supplies the main system, either automatically or manually, with data regarding the vendor product item catalog.

FIGURE 4 is a flowchart showing on a high level the process flow through the transaction program 1000. In step 1002, a customer retrieves and inputs data into the customer database 106 in the customer computer system 104. In step 1004, the customer selects information from its database and inputs

information into the database, such as new requisition data 134. Periodically, such as once a day, new information added to the customer database, such as new requisitions data files, is transmitted to the main computer system 100 in step 1006. This information is used to update the databases 102 in the main system and, in particular, the requisition database 124.

In steps 1008 and 1010, the main computer system segregates data, such as requisition item information, from the data supplied by the customer and collates that information by individual vendors and internal departments. If the requisition item is to be delivered by an internal department, then the information needed to fulfill the order, such as ship-to and requisition item information is transmitted directly to the appropriate department computer system in step 1008. Similarly, if the requisition is to be fulfilled by an outside vendor, then the appropriate requisition (purchase order) information is transmitted to the vendor in step 1010. The status of purchase orders being filled by vendors is obtained by acknowledgement information provided by the vendor in step 1012. In addition, the system has the capability of monitoring costs, prices and other data, and generating reports regarding historical data trends and comparisons with current data.

Invoice data from outside vendors and internal departments is centrally processed in step 1014 and submitted to a central accounts payable department

1016. Invoices may be transmitted directly to the customer computer system, during the periodic data exchange, in step 1018. In return, payment information may flow from the customer to the main computer system.

The master item catalog 126 is periodically updated with information received from the individual vendors 106 in step 1020. Since the master catalog information includes data on the individual customers, e.g., those authorized to order individual items, the customer catalogs stored in each customer database are easily updated from the master item catalog.

FIGURE 5 shows the processing steps for the on-line purchasing system 110 executed at the customer computer system 104. An authorized user at a customer workstation initially selects a function operation from a system menu screen 1021 such as shown in FIGURE 6. The available functions presented in the menu screen include entering a new requisition (FIG. 7), changing or deleting a requisition (step 1020). The system limits changes and deletions of requisitions to only those requisitions not completed and transmitted to the main computer system.

Pending (even non-completed) requisition data is accessible from the database on the customer computer system which may include data files on the customer that placed the requisition (CUS SLTD) 1022, the location to which the order is to be shipped (CUS SHTO) 1024, the customer person to whom the delivery

is to be made (CUS ATN TO) 1026, and the catalog available to that customer (CUS CATALOG) 1028. This information is initially established during set-up of the customer connection to the main system and is maintained by the central computer system.

The customer database files are updated for new requisition orders, changes or deletions with information such as the requisition header 1030, (e.g., containing data on the requisition number, customer shipping location and other information not unique to the items ordered) and requisition details 1032, that includes information such as the item number, quantity order and customer price. An exemplary screen 1034 for making a requisition from a customer workstation is shown in FIGURE 7. Data on pending requisitions may be retrieved from the customer database during a requisition inquiry in step 1034 via screens, such as shown in FIGURES 10 to 12. In addition, the menu functions may include a catalog inquiry in step 1035 and using a screen such as shown in FIGURE 13.

In particular, FIGURE 8 shows the steps for entering a new requisition, or changing or deleting a pending requisition (or may be only an uncompleted requisition). From the initial menu 1021 (FIG. 6), at step 1040, the customer selects a function to add, change or delete a requisition. This selection causes the display of an appropriate screen such as shown in FIGURES 7 and 10 to 12. If a new requisition is to be added, a requisition screen 1034 (FIG. 7) is displayed on the customer workstation in

step 1042. Upon entry of a location identification code, the requisition screen automatically presents data 1044 regarding the customer, particular customer site, other identifying information regarding the customer and the particular authorized customer user. This information is retrieved from the customer database and, in particular, from customer database files, such as ship-to, attention-to and sold-to files 132. In addition, the new requisition entry screen 1034 automatically displays an identifying requisition number and date 1046.

The customer enters product item data 1048, 1050 regarding the particular items to be requisitioned, including the selected item number 1048 and quantity 1050 of items. Information regarding items, item numbers and price may be obtained on-line from the customer catalog 136 via a catalog screen 1052, such as shown in FIGURE 13. The customer catalog may be searched by product group or keyword. Quantity item ordering data 1051 may be entered directly into the catalog screen and the data then linked to the requisition screen. Information entered into the requisition screen 1058 is stored in the requisition database 134 of the customer computer system and, in particular, is segregated into requisition header information 1054 (e.g., requisition number, customer ship-to, and requisition date), and requisition detail information 1056 (such as requisitioned items, price and quantity).

Once stored, requisition information may be retrieved at the customer workstation via a

requisition inquiry, step 1058 (and screen 1059 of FIG. 10), a requisition change, step 1060 or requisition delete function, step 1062, from the main menu shown in FIGURE 6. The requisition status information will retrieve information on all pending requisitions (FIG. 10), items in a particular requisition (FIG. 11) and delivery order status (FIG. 12), provided that the main computer has updated the customer database with that information. This updating is accomplished on a periodic batch basis, such as once an day.

FIGURE 9 shows a flowchart of the steps that occur when a customer makes a final requisition selection and that selection is transmitted to the main system computer. In step 1200, the customer enters a completed requisition order such as the screen 1034 shown in FIGURE 7. The customer computer stores the completed requisition entry in its requisition database 134. Control reports are generated in step 1202 by the customer computer from its databases to provide the customer with information regarding its requisitions, such as totals of items ordered, prices and other information.

The new completed requisition information in the customer database is transmitted to the main system computer 100 during periodic batch processing in step 1204. Similarly, update information, e.g., purchase order acknowledgments, ship-to updates and product item updates, from the main computer is transmitted to the customer computer to update the customer database in step 1206.

Since all update information from the main system is transmitted only on a periodic batch basis, this information is transmitted to the customer computer as a composite update file, 1208. Upon receipt of this composite file, the customer computer splits the file to update the appropriate customer database files in step 1210.

For example, update information on requisitions is received as sequence requisition update information 1212 and the update information, in step 1214, is applied to the appropriate database(s) or files for requisition headers, 1216, requisition details, 1218, and requisition status, 1220. Control reports are generated at the customer site to provide adequate notice of new update information and may be provided to just one management user for each customer. Most update information is documented in control reports. Generally, control reports state the number and types of record files updated so that this information can be compared to the number of updates sent to the customer computer system.

Similarly, update information on the customer catalog (SEQ CUS UPDATES) 1222 is processed 1224 to update file items 1226 in the catalog database 136. Since the master catalog database 126 on the main computer correlates each catalog item entry by customer and price, the individual customer catalogs are readily updated. In addition, data files on a particular customer, such as to whom at the customer items are to be sold, billed, shipped and directed to the attention of, 1228, are updated at the main

computer system 100 and then transmitted to the customer computer to update, step 1230, similar database files 1232 in the customer databases. The data in the catalog and customer update files are also documented in control reports. The initial customer specific information is entered when the customer is initially set up to interact with the main computer requisition system.

FIGURE 14 shows the data processing steps for handling completed customer requisitions 1300 transmitted to the main system computer 100. The customer computer system transmits data files (SEQ CUS RQN) 1303 regarding requisitions in step 1302. The data transmitted is initially verified in step 1304 and reformatted to data files (SEQ CHNL) 1305 compatible with the main computer system in step 1306. In step 1308, the new requisition data files loaded into the requisition database 122, through appropriate data files 1310, such as header (HDR) and detail (DTL).

In step 1312, the data files loaded in the databases 102, is edited such that the customer number is converted, see data files 1314, to appropriate bill-to, ship-to, sold-to and attention-to data and then verified to ensure that the data is consistent with stored data and that the item numbers ordered conform to the item numbers in the master catalog 126. In step 1316, the requisition detail data on ordered items is split into data for the appropriate outside vendor, see data field 1318, and data for the appropriate

internal departments, see data field 1320. The data fields for the internal departments is again reformatted in step 1322 for reloading back into the databases 102 of the main computer system. Generally, each internal department will maintain its own databases, separate from those of the main computer system, in a fashion similar to outside vendors.

FIGURE 15 shows the data processing flow for updating the status of requisition orders. In step 1350, a vendor transmitted requisition update file 1352 provided in a standard format, e.g., EDI, is reformatted 1354 for loading, step 1356 into the main system databases 102, and in particular the requisition database 124. The loaded reformatted data 1358 is compared to existing requisition data in step 1359. An error file 1361 and report are generated and the report printed, if necessary, in step 1360. A status report file 1362 is also generated and reports are printed on the status of the requisitions 1364 and of the appropriate vendor 1366. In addition, a substitution file 1368 is created when the data is reformatted in step 1350 and a substitution report is generated in step 1370.

In addition, when the new requisition status data files are loaded into the databases 102, then specific information is extracted from this data in step 1372, such as confirmed requisitions, and a sequential data file 1374 is created of that extracted information and maintained in the main database 102. In step 1376, for example, the

individual requisitions for particular items may be grouped so as to order the items in standard bulk units, e.g., cartons, from the vendor or department. In step 1378, this file is used to update the requisition detail information in the requisition database 124 and to provide a requisition update file 1380 to be later transmitted to the customer to update the customer database.

FIGURES 16 to 20 show the data processing flow steps for processing invoices. Upon receipt of a vendor invoice 1400, in a standard EDI format that includes the price charged by the vendor 1401 to the central supplier, the main computer system translates and initially processes the invoice in step 1402. The invoices is printed in step 1404 as a printed invoice 1406 for control purposes. Moreover, an item shipped data file (PART FIL) 1407 for item orders filled, e.g., delivered by vendor or department, is accessed to supply data to confirm that invoices are not accepted for quantities shipped of any particular item. The items shipped data is provided from the vendor in order acknowledgement data. In addition, any errors in the transmitted invoice are documented in an error file 1408 and sent to a department, e.g., the financial (FIN) department 1410 for further processing. The reformatted invoice data (TRANS IN) 1412 is again reformatted in step 1414 into an appropriate database format file 1416 and then loaded in the invoice database 130 in step 1418.

In step 1420, the reformatted invoice data 1422 (which may include invoice or credit information)

obtained from the requisition data file 130, including requisition header and detail data, is validated, step 1423, to confirm that the vendor invoice is a participating vendor in the computerized requisition system. Invoices received from non-participating vendors or for orders to be handled outside of the channel system are placed on data files 1424, unrelated to the present system, for invoices or credits from these vendors. Assuming that the invoice data is validated, then the data is edited, step 1426 for errors and report files, 1428, are generated of edited invoice and credit information.

In step 1430, the edited invoice data is again reformatted and annotated with requisition data 130, e.g., from requisition header and detail files (RQN HDR and RQN DTL), to conform to the master database 102 format and is then stored in the master database invoice file and master customer file (VLD CM) 131. (MAST INV) 130 and validated.

In step 1440, data on invoices that have been invoiced to the customer are extracted from the invoice file 130 and sent in a marked invoice file 1442 annotated with corresponding data, such as the price to be paid by the customer for the ordered items, from the customer item file 1444. A price mark-up data file 1445 may be used to convert the price for an item paid by the central supplier into the price charged to the customer for that item. In addition, control reports are generated with the marked invoice files. In step 1448, the invoice file

data 1442 is reformatted into a standard invoice format and sent to the customer (CUST) 1450 from a invoicing service (NIS) via mail and/or an electronic data file 1452 that is annotated with data from a central invoicing department (CI) 1454.

In step 1456, the invoice confirmation data 1458 is extracted and associated with the appropriate customer invoicing files 1460, and then applied to update data in the databases in step 1462. In updating the databases, the confirmed invoice files 1460 correlated with the requisition database 124 and used to update 1464 the appropriate requisition detail files (RQN DTL). If the invoice data does not correspond to a requisition stored in the requisition database, then the data is placed in a non-channel invoice file 1466. The updated requisition detail files are applied to update the requisition header (REQ HDR), history (HIST) and statistics files in step 1468.

In step 1470, confirmed invoices are extracted from the invoice file 130 and forwarded as a vendor invoice file 1472 to an accounts payable department 1474 for payment of the vendor. Similarly, an accounts payable report is generated at step 1476. In step 1478, invoices with an extracted status, see file 1442, but not processed into a confirmed invoice, see file 1458, within a specified period, such as five days, are placed in an invalid invoice file 1480 and forwarded to a financial department 1482 for handling. Similarly, files and/or reports on valid and invalid credit memoranda (CM) and

invoices found invalid for other reasons are also sent to the financial department 1482.

FIGURE 21 shows the data processing flow for processing of source data from an internal department of the central supplier. In step 1500, data is extracted from various department files 1502, such as for maintaining customer data files and used to update customer files 122, such as sold-to, bill-to and ship-to files. In addition, in step 1504, customer attention file 1507, e.g., update, information is extracted from the updated customer files using the customer master location file 1506 as a driver to generate customer update 1508 data to be sent to the customer computer system to update the customer databases.

FIGURE 22 shows the generation of vendor purchase orders from a vendor order file 1510 that contains data on the customer, items ordered and price to the central supplier. This data is reformatted into standard purchase order forms 1512 for each vendor in step 1514. These purchase orders are then electronically transmitted, step 1516, to the appropriate vendor.

FIGURES 23 to 26 show the data flow for assembling and maintaining a master item catalog 126 and the individual customer catalogs 136. Individual vendors 1550, provide data (see FIGURE 13) to the central computer system regarding the items offered by that vendor, including the price to the central

supplier, in step 1552. Each item in the master catalog 126 has an associated vendor item field 1554.

The master vendor item catalog 126 is initially assembled, in step 1556, from information provided from the vendor, such as an electronically readable tape. Subsequent items from a particular vendor are added to the master catalog in step 1558. All vendor items may be classified by a class code from a class code file 1560 or product group file from the general reference database file 128.

The price to the customer for each vendor item is established by the central supplier in step 1562 using data from a vendor cost file 1564. The price for each item may be established on an individual customer basis and loaded into files for the customer item catalog and item price 1566. Similarly, the customer price and item files can be updated when the vendor item data is changed in step 1568.

The individual customer catalogs 136 includes individual customer item data 1566. The customer initially selects the items to be offered in its customer catalog in step 1572 using data files on vendor items 1554, product classes and groups 1576, and customer sold to data 1578. The customer items may be later added to, step 1580, or changed, step 1582. Usually, the customer item files are generated at the central supplier rather than at the customer computer system. In addition, customer pricing, step 1586, and unique item pricing, step 1548, may be applied to items listed in the customer item data

files 1566. In addition, previously supplied cost data (SEQ CUS CST) 1567 may also be maintained.

The customer catalog 136 is assembled, step 1600, by extracting, 1602, data from prior item order files, 1604, for that customer to generate a data file 1606 for comparing and merging, step 1608, data 1607 extracted, step 1609, data on items in the master catalog and other data files 1610. These files are periodically updated to, for example, make price changes in step 1612. The resulting data file 1616 containing customer catalog updates is applied to update the customer catalog in steps 1618 and 1620.

The invention has been described in connection with what is presently considered the preferred embodiment. The invention is not limited to this embodiment. Rather, the invention covers various modifications and equivalent arrangements included within the spirit and scope of the appended claims.

WHAT IS CLAIMED IS:

1. A requisition tracking system comprising:  
a central computer system maintaining data files containing data on customers, customer initiated requisitions, invoicing and a product items, said central computer system electronically receiving requisition orders from a plurality of customer computer systems and formatting said requisition orders into purchase orders, and receiving invoice data from a plurality of supply departments or vendors computer systems,

each of said customer computer systems electronically communicating with said central computer system to enter said requisition orders for particular product items, and having data files containing data on requisitions and product items, and

each of said vendor computer systems electronically communicating with said central computer system for receiving said purchase orders and for transmitting said invoices.

2. A requisition tracking system as in claim 1 wherein said data on product items is in the form of an electronic catalog accessible via said customer computer systems and identifying products available for requisition.

3. A requisition tracking system as in claim 2 wherein said electronic catalog includes data uniquely identifying product items by an alphanumeric designation, description and said catalog being searched by keyword and product category codes.

## AMENDED CLAIMS

[received by the International Bureau on 5 September 1994 (05.09.94);  
original claims 1,3 amended;  
new claims 4-9 added;  
remaining claim unchanged (4 pages)]

1. A requisition tracking system comprising:

a central computer system having a memory containing data files and a data communication unit for communicating with other computer systems, said central computer system maintaining said data files containing data on customers, customer initiated requisitions, invoicing and product items, said central computer system electronically receiving requisition orders from a plurality of customer computer systems, generating purchase orders from information in the requisition orders, individually addressing each purchase order to a selected vendor, transmitting each purchase order to a vendor computer system for the selected vendor, and receiving invoices from a plurality of vendor computer systems, wherein said invoices identify the requisition orders that each vendor has accepted,

each of said customer computer systems having a communication unit for electronically communicating with said central computer system to transmit customer data and said requisition orders for requisitional product items, and having a memory with data files containing data on requisitions and product items, and

each of said vendor computer systems having a communication unit for electronically communicating with said central computer system for receiving said purchase orders and for transmitting said invoices having data including an acceptance of a requisition order.

2. A requisition tracking system as in claim 1 wherein said data on product items is in the form of an electronic catalog accessible via said customer computer systems and identifying products available for requisition.

3. A requisition tracking system as in claim 2 wherein said electronic catalog includes data uniquely identifying product items by an alphanumeric designation, description, keywords and product category codes, and said catalog being searched using one of said customer computer systems by keyword and product category codes.
4. A requisition tracking system as in claim 1 wherein said central computer system reformats data from said invoices from a plurality of vendor computer systems into individual customer invoices and electronically transmits said customer invoices to said customer computer systems.
5. A requisition tracking system as in claim 1 wherein said central computer system maintains said customer initiated requisition data files with current status data that indicates whether a requisitioned product item has been shipped to a customer and said vendor computer systems transmits status data to said central computer system indicating that said requisitioned items have been shipped.
6. A requisition tracking system as in claim 5 wherein said central computer system transmits said current status data regarding the requisitional product items.
7. A requisition tracking system as in claim 1, wherein said customer computer system periodically transmits update data indicative of an authorized customer and said central computer system maintains said customer data files by updating the customer data files with said update data received from said customer computer systems.

8. A requisitioning computer system as in claim 1 wherein said data files in said central computer system include historical data on the customers, requisition orders, and product items, and said central computer system processes said historical data in generating a report of certain selected extracts of said historical data.

9. A requisition system comprising:

a central computer system at a first location having data files containing information on customers, product and service catalogs, suppliers of products and services, customer requisitions of products and services, purchase orders, and invoices,

a processing unit for selecting vendors to supply customer requisitioned products and services, and for generating purchase orders for each selected vendor that identifies a requisitioned product or service, a requisitioning customer who requisitioned the product or service, and the selected vendor to supply the requisitioned product or service, and

a communication unit for receiving customer requisitions from a plurality of customer computer systems and invoices from a plurality of vendor computer systems, and for transmitting purchase orders to the vendor computer systems;

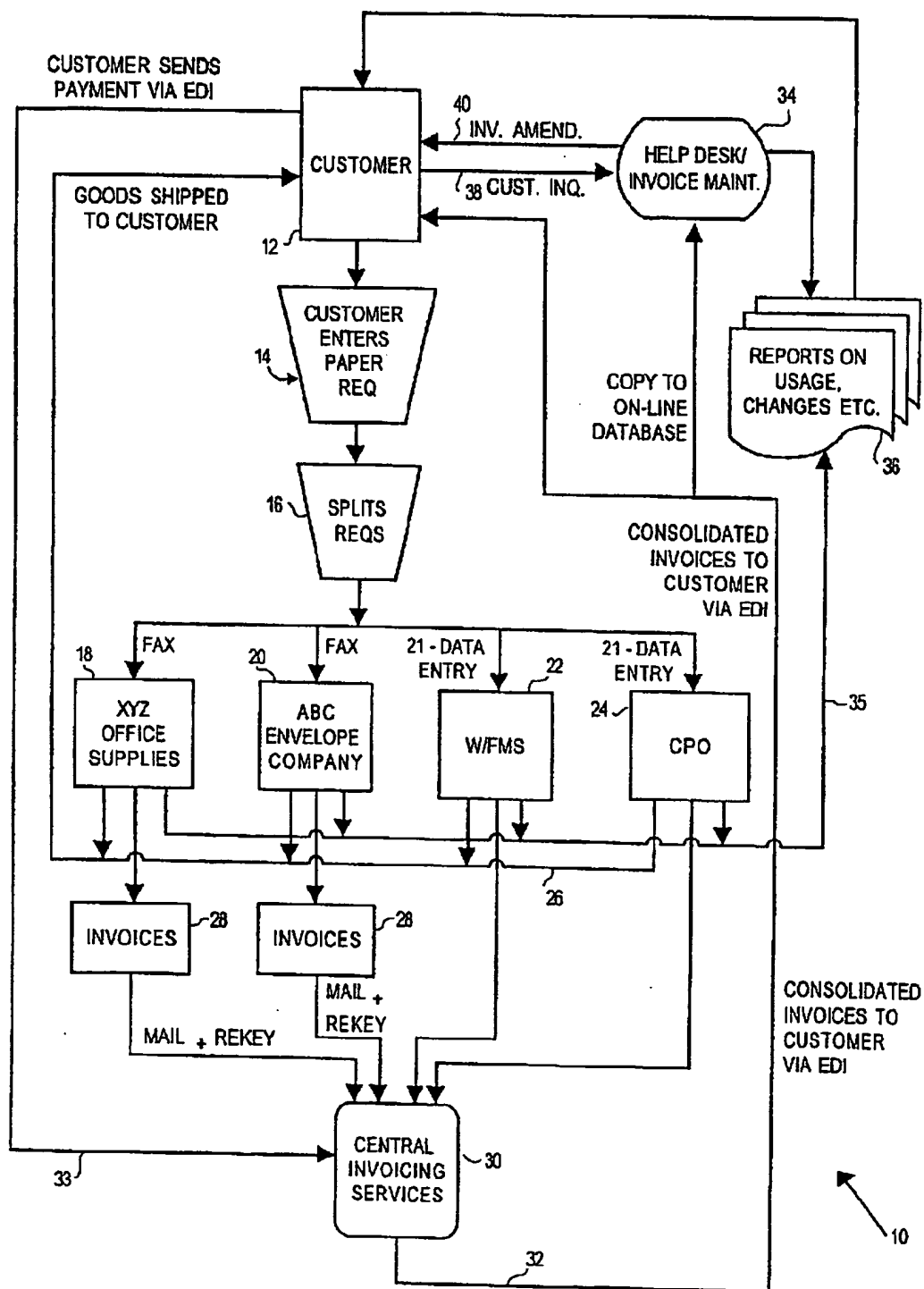
the plurality of customer computer systems are at locations remote from said central computing system and receive data from the data files in the central computer system including catalogs, and transmit requisition orders for one or more products or services selected from the catalogs;

the plurality of vendor computer systems receive, accept and process the requisition orders received from the central computer system, generate invoices containing product and service shipping information, and

product and service cost information and transmit the invoices to the central computer.

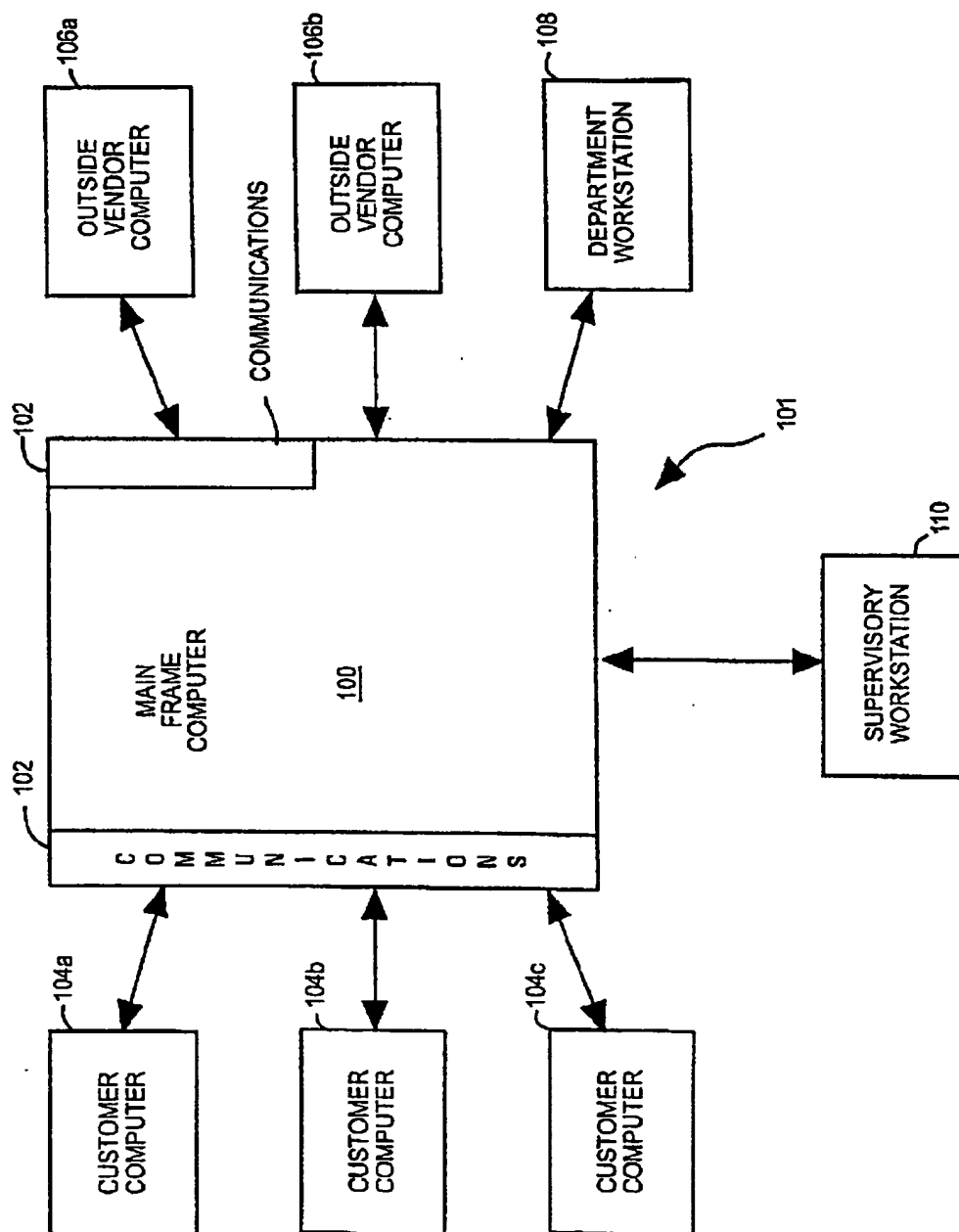
1/30

Fig 1 (PRIOR ART)



2/30

Fig 2



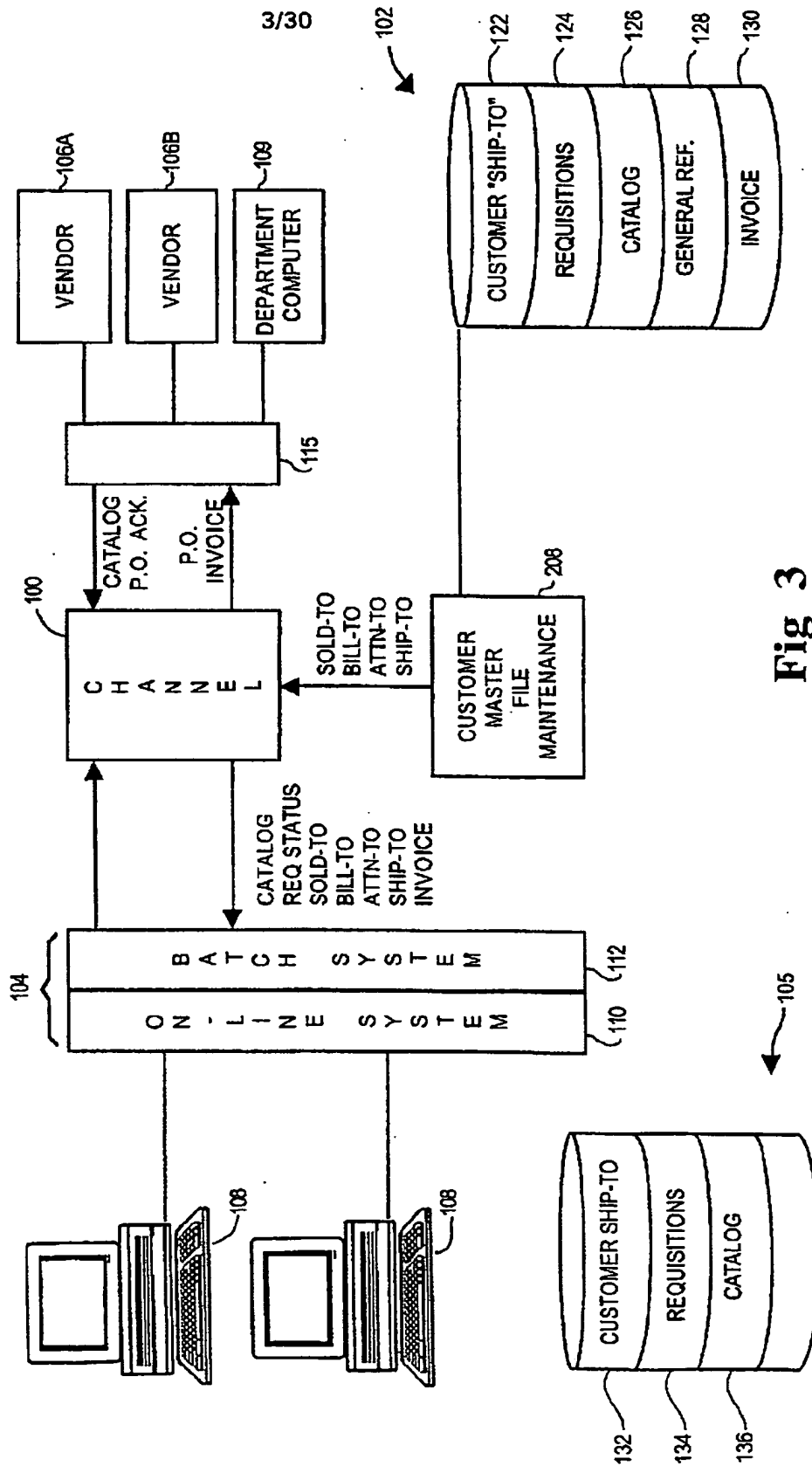
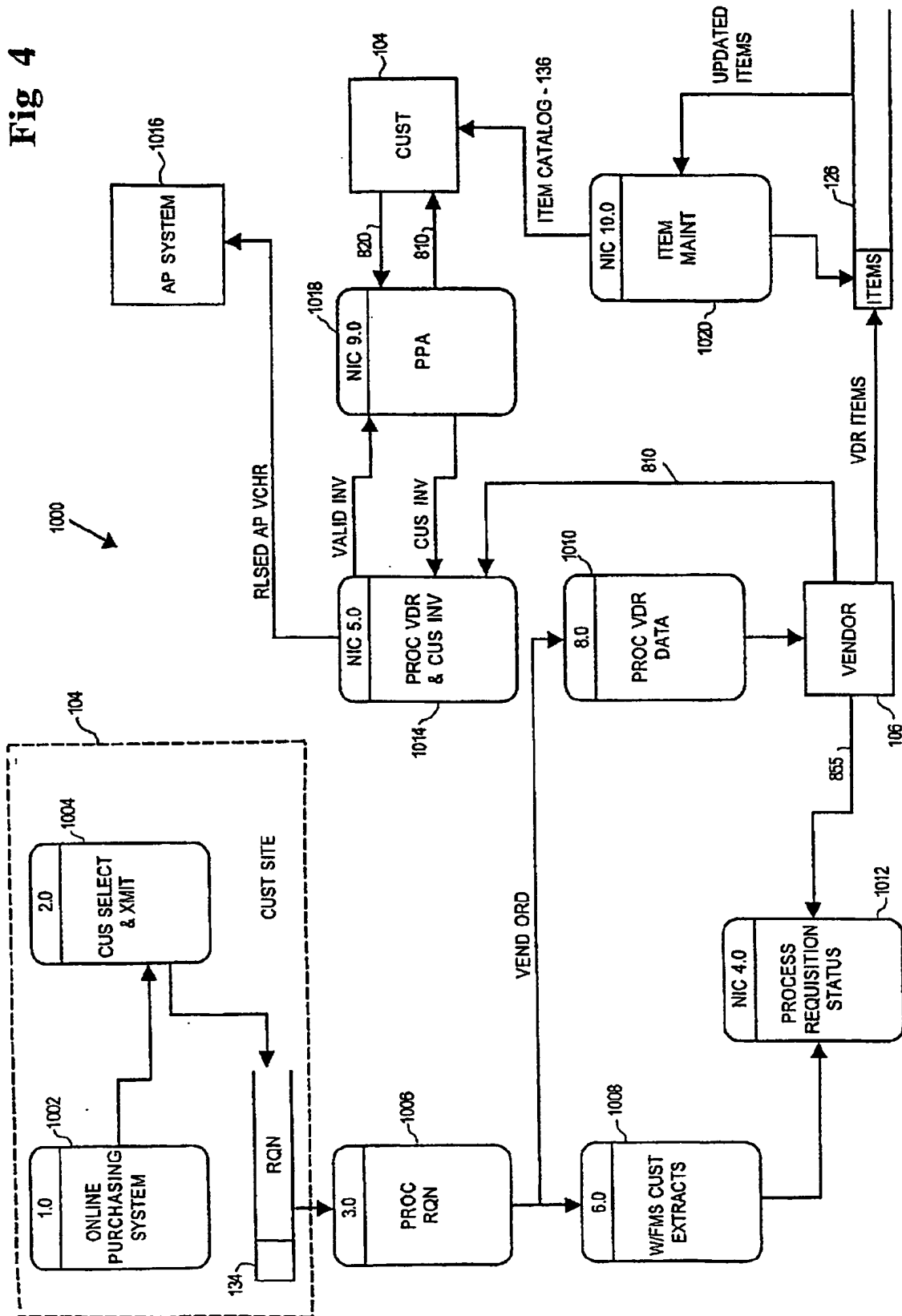


Fig 3

**4/30**

**Fig 4**



5/30

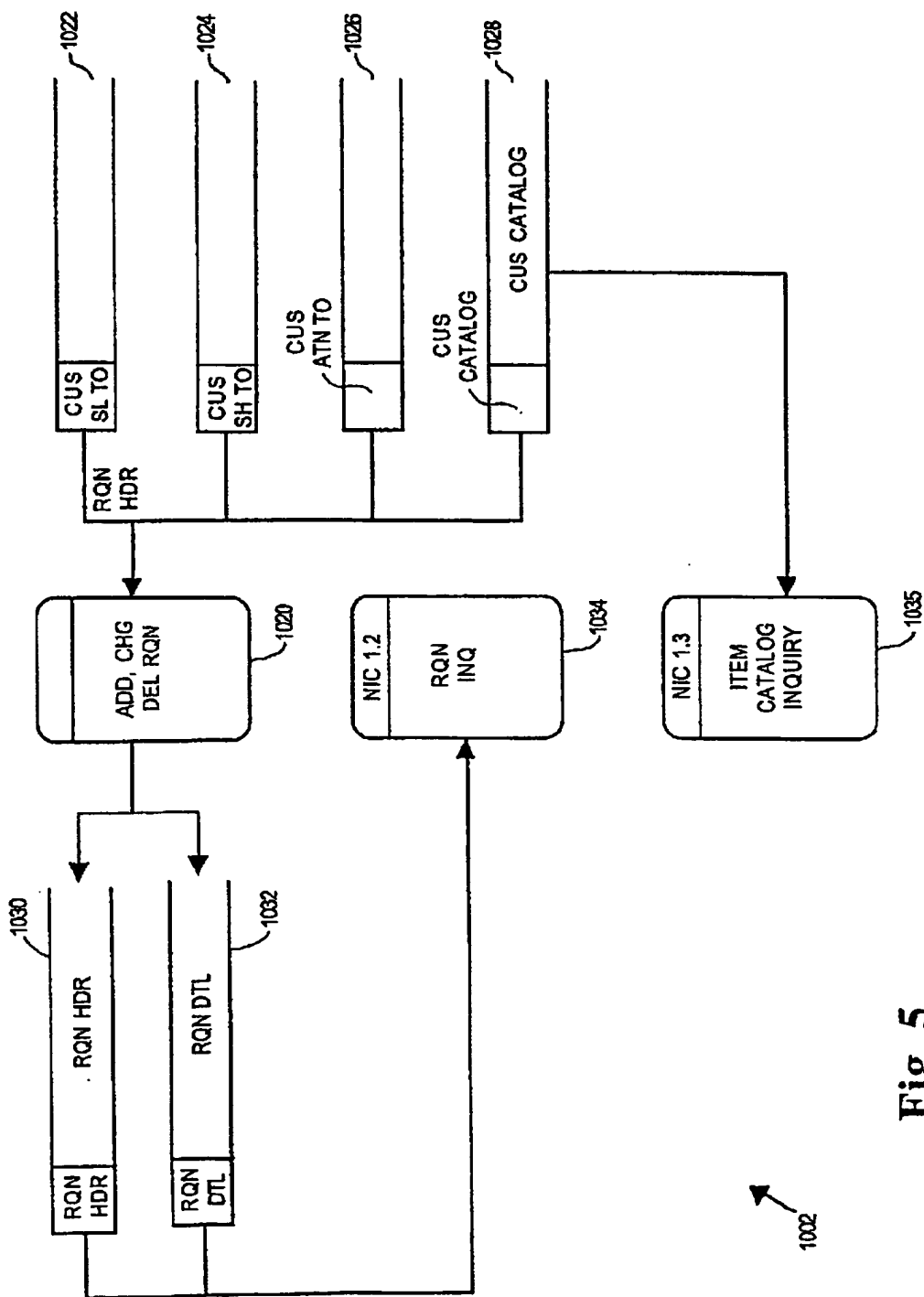


Fig 5

6/30

1021

IC01	CHANNEL/INTEGRATED SUPPLIER SYSTEM SYSTEM MENU	MM-DD-YYYY HH:MM AM
CUSTOMER NUMBER.: 9999999999999999		
CUSTOMER NAME...: TEST CUSTOMER		
1. NEW REQUISITION ENTRY		
2. REQUISITION STATUS INQUIRY		
3. CHANGE REQUISITION		
4. DELETE REQUISITION		
5. ITEM CATALOG INQUIRY		
6. EXIT SYSTEM		
SELECT A FUNCTION: -		
PFK: 1=HELP; 3=EXIT		

Fig 6

7/30

1046

STATUS.....: ENTRYLVL  
 REQUISITION #....: 329  
 REQUISITION DATE: 01-20-1992  
 BANK CENTER.....: 5101-0101537  
 ORDERED BY.....:  
 PHONE NUMBER.....:  
 REMARKS.....:  
 HOLD REQUISITION (Y/N) ? N

1044

SHIP-TO ID...: 3-6543210-10002  
 SHIP-TO NAME: CUSTOMER NAME  
 ADDRESS 1....:  
 ADDRESS 2....: 1 CUSTOMER'S LOCATION  
 CITY.....: CHICAGO  
 STATE.....: IL ZIP: 606060000

1048

LINE	ITEM NUMBER	QUANTITY	UM	QTY/UM	ITEM DESCRIPTION	
1	AB16RB	46	BX	1	RUBBER BANDS	NONE
2	AM21452	35	CS	1	5X8 SCRATCH PADS	WHITE
3	AM47103	58	DZ	1	2 1/2 ADD ROLL	WHITE
4						
5						
6						
7						
8						

1050

1034

PEK: 1=HELP; 3=SAVE; 7=PG BWD; 8=PG FWD; 10=CATALOG; 12=CANCEL

Fig 7

8/30

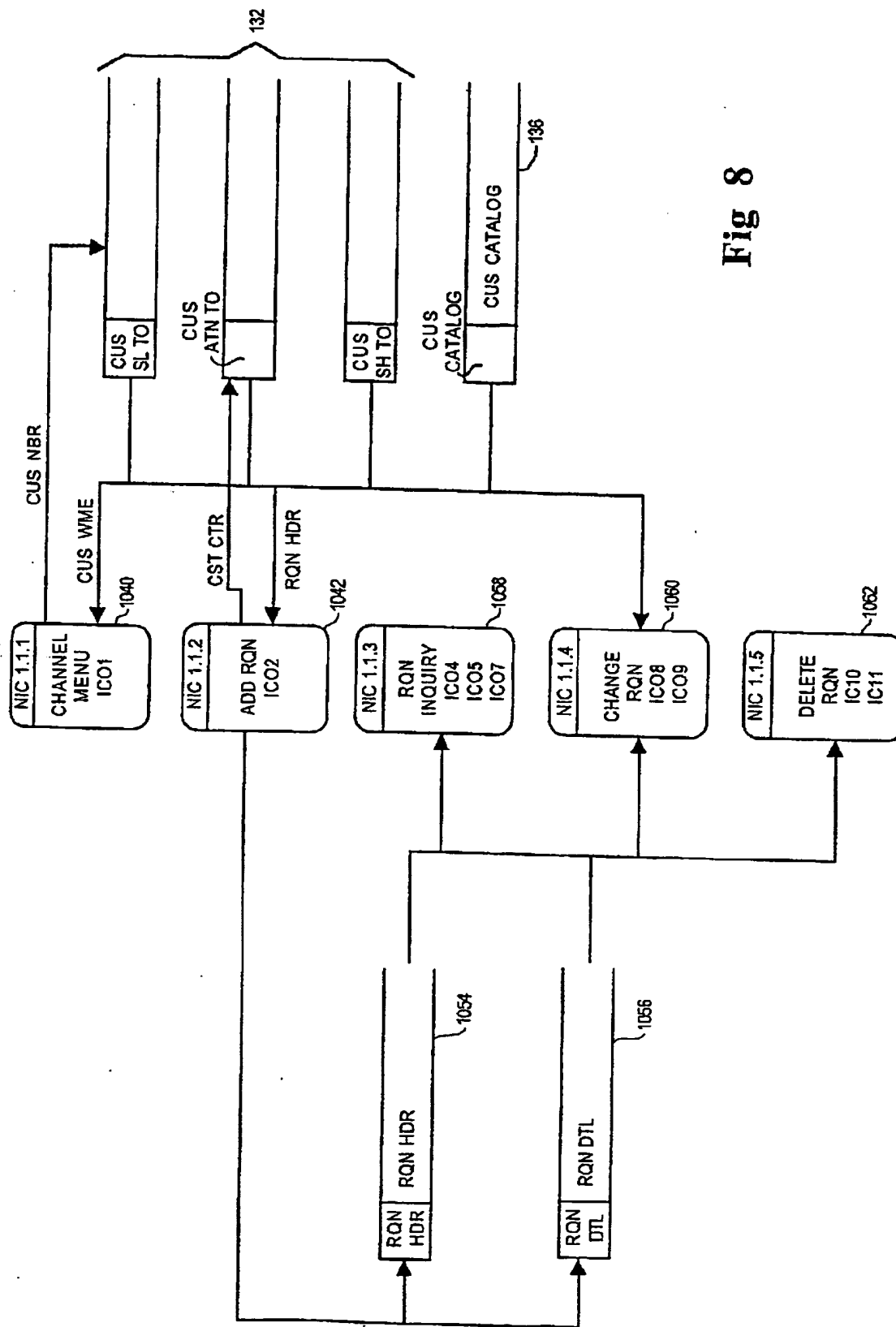
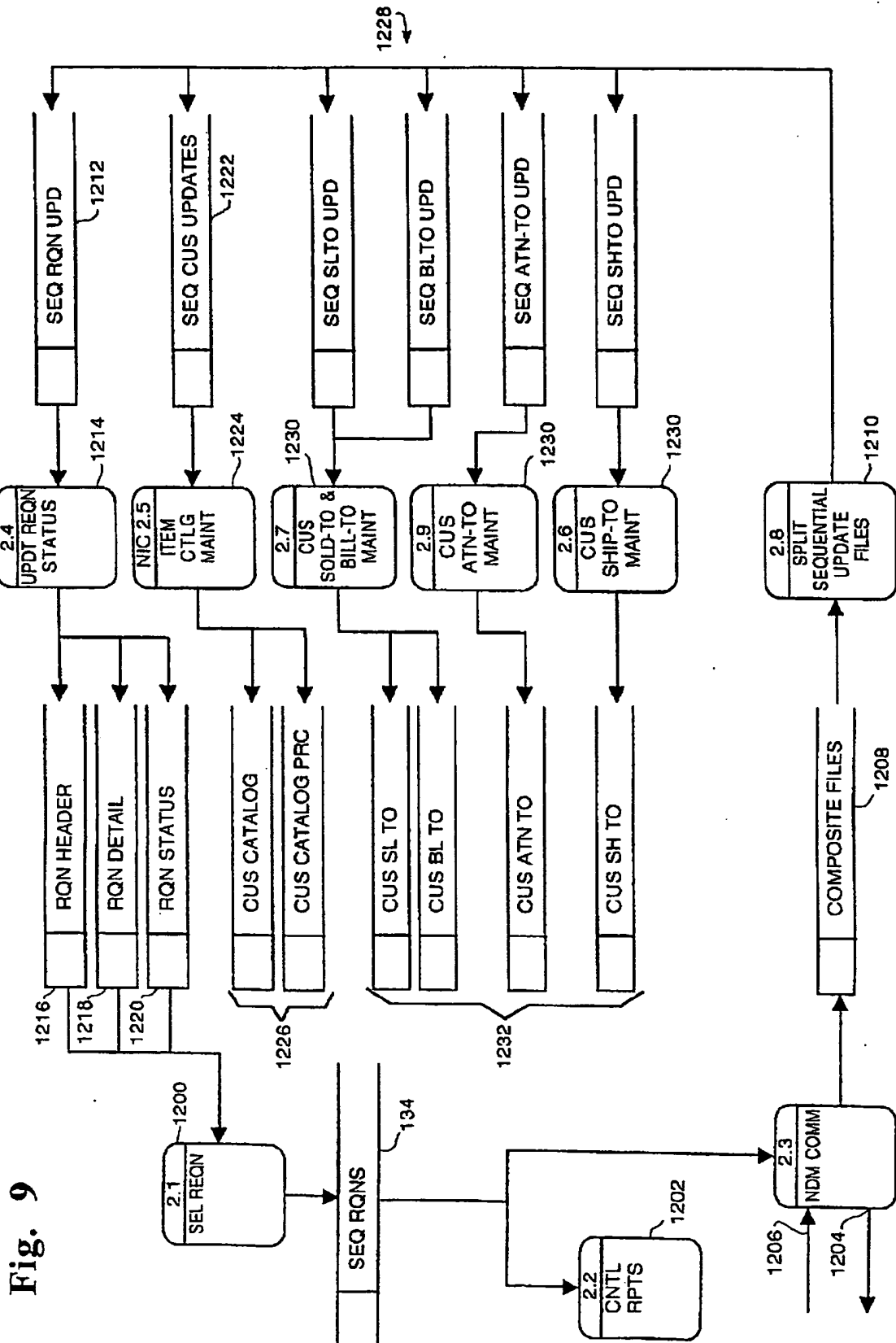


Fig 8

9/30



10/30

IC04

CHANNEL/INTEGRATED SUPPLIER SYSTEM

INQUIRY REQUISITION SELECTION

01-21-1992

10:11 AM

REQUISITION NBR.....: \_\_\_\_\_

REQUISITION STATUS....: \_\_\_\_\_

REQUISITION DATE FROM: 01-01-1991 TO: \_\_\_\_\_

BANK CENTER: \_\_\_\_\_

----- ENTER INFORMATION ABOVE TO LIMIT REQUISITION SELECTIONS -----

REQN NUMBER	DATE	STATUS	ORDERED BY	PHONE # / EXT
214	12-11-1991	SHIPPED	JDK	6284
215	12-11-1991	TRANSMIT	JDK	6284
216	12-11-1991	TRANSMIT	JDK	6482
217	12-11-1991	TRANSMIT		
218	12-12-1991	TRANSMIT		999
219	12-12-1991	TRANSMIT		
220	12-12-1991	TRANSMIT		
221	12-12-1991	TRANSMIT		

PAGE 07 \* MORE PAGES \*

PLACE CURSOR ON REQN LINE, KEY "S" AND PRESS ENTER TO DISPLAY DETAIL

BROWSE FROM (Y/N):N

PFK: 1=HELP; 3=EXIT; 5=REFRESH; 7=PG BWD; 8=PG FWD; 12=CANCEL

Fig 10

11/30

IC05		CHANNEL/INTEGRATED SUPPLIER SYSTEM		01-21-1992	
		REQUISITION INQUIRY		12:57 PM	
STATUS.....: IN-PROC		SHIP-TO ID...: 3-65453210-10088			
REQUISITION #....: 214		SHIP-TO NAME: CUSTOMER NAME			
REQUISITION DATE: 12-11-1991		ADDRESS 1....:			
BANK CENTER.....: 5101-0101007		ADDRESS 2....: 1 CUSTOMER'S LOCATION			
ORDERED BY.....: JDK		CITY.....: CHICAGO			
PHONE NUMBER.....: 6284		STATE.....: IL ZIP: 606060000			
REMARKS.....:					

LINE	ITEM NUMBER	QUANTITY	UM	ITEM DESCRIPTION	STATUS	DATE
\$ 1	B-89	10	RL	PLASTIC BAGS/GREEN	SHIPPED	01-21-1992
2	BC 1001	10	PK	EASY PAY	IN-PROC	12-11-1991
3	BC 1003	10	BX	MERCHANT DEP ENVELOPE	IN-PROC	12-11-1991
4	BC 1004	10	PK	BANK CR CARD SUMM TRAN	IN-PROC	12-11-1991
5	BMS-001A	10	CT	TELLER TAPE SHARP 2-PL	IN-PROC	12-11-1991
6	BMS-003B	10	CT	TELLER TAPE 3-7/16 2-P	SHIPPED	12-11-1991
7	BMS-005	10	BX	TELLER TAPE 2 PLY IBM	IN-PROC	12-11-1991
8	BMS-006	10	CT	PROOF 3.5X5.5 1-PLY	BACKORD	12-11-1991

PAGE 01 \* MORE PAGES \* START BROWSE LINE NBR : \_\_\_\_\_

PLACE CURSOR ON DETAIL LINE, KEY "S" AND PRESS ENTER TO DISPLAY STATUS

PFK: 1-HELP; 3-EXIT; 7-PG BWD; 8-PG FWD; 12-CANCEL

Fig 11

12/30

IC07	CHANNEL/INTEGRATED SUPPLIER SYSTEM		01-21-1991
	REQUISITION DETAIL LINE STATUS INQUIRY		04:07 PM
REQUISITION NBR.: 214		DATE... 12-11-1991	STATUS... IN PROC
LINE NBR.....	1		
ITEM NUMBER..	B-89	QTY ORD..	10 STATUS.. SHIPPED
DESCRIPTION..	PLASTIC BAGS/GREEN	SHIP QTY.	10 DATE.... 01-21-1992
		QTY B/O..	0
VEND		BILL OF LADING NUMBER	
SEQ STAT QTY SHIPPED DATE SHIP CARRIER			
1 AC	7	01-13-1992	UPS
2 IS	3	01-17-1992	UPS
PAGE 01		START BROWSE LINE NBR....	
PFK: 1=HELP; 3=EXIT; 7=PG BWD; 8=PG FWD; 12=CANCEL			

Fig 12

13/30

IC26

CHANNEL/INTEGRATED SUPPLIER SYSTEM

ITEM CATALOG INQUIRY

MM-DD-YYYY

HH:MM AM

PRODUCT GROUPS:

1: FORMS

2: ENVELOPES

3: OFFICE SUPPLIES

4: COMPUTER SUPPLIES

5:

6:

7:

8:

9:

GROUP SELECTION.: 3

ITEM SEARCH.....: PEN

DISPLAY SEQUENCE: K (K=KEYWORD, N=ITEM NBR)

QUANTITY	ITEM NUMBER	UM	QTY/UM	ITEM DESCRIPTION	
26	V1-ITEM1	EA	1	BALL POINT PEN - MED/R	RED
24	V1-ITEM14	EA	12	PENCILS #2	GOLD
	V1-ITEM15	EA	25	VENDOR ITEM 15	SILVER
	V1-ITEM2	EA	1	BALL POINT PEN - MED/B	BLUE
	V1-ITEM3	EA	1	BALL POINT PEN - MED/B	BLACK
	V1-ITEM4	EA	1	BALL POINT PEN - MED/G	GREEN
	V1-ITEM5	EA	1	FELT TIP PEN - FINE/RE	RED
	V1-ITEM6	EA	1	FELT TIP PEN - FINE/BL	BLACK

PAGE 1 \* MORE PAGES \*

PFK: 1=HELP; 3=EXIT; 5=REFRESH; 7=PG BWD; 8=PG FWD; 10=REQN; 12=CANCEL

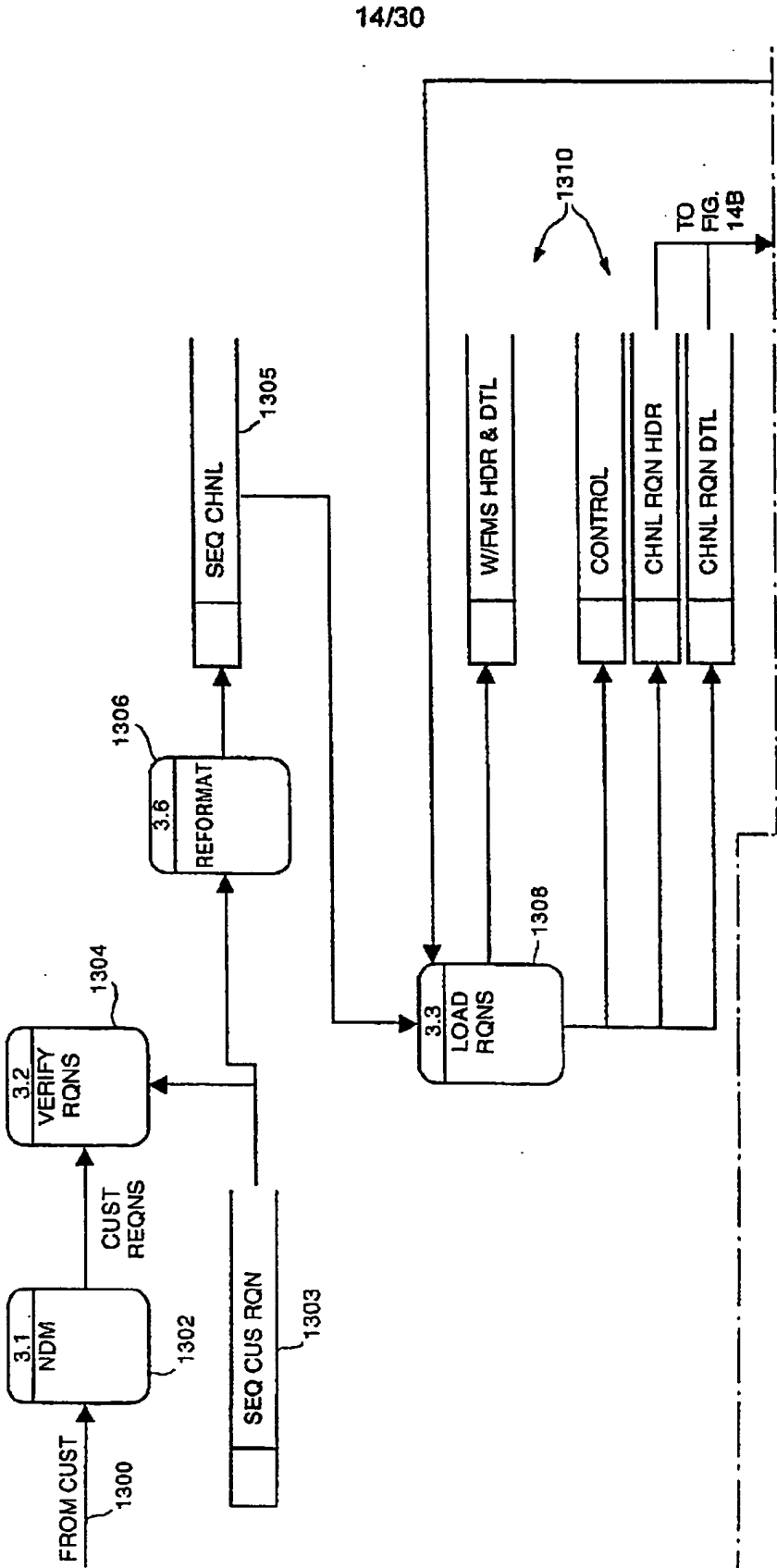
1052

1051

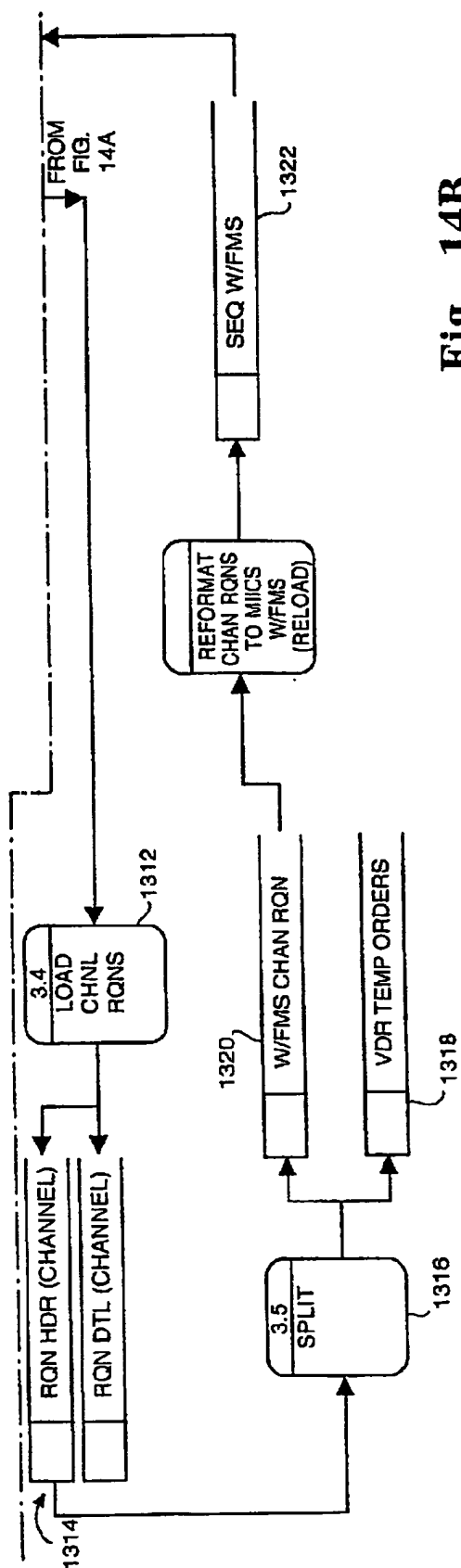
SUBSTITUTE SHEET (RULE 26)

Fig 13

Fig. 14A

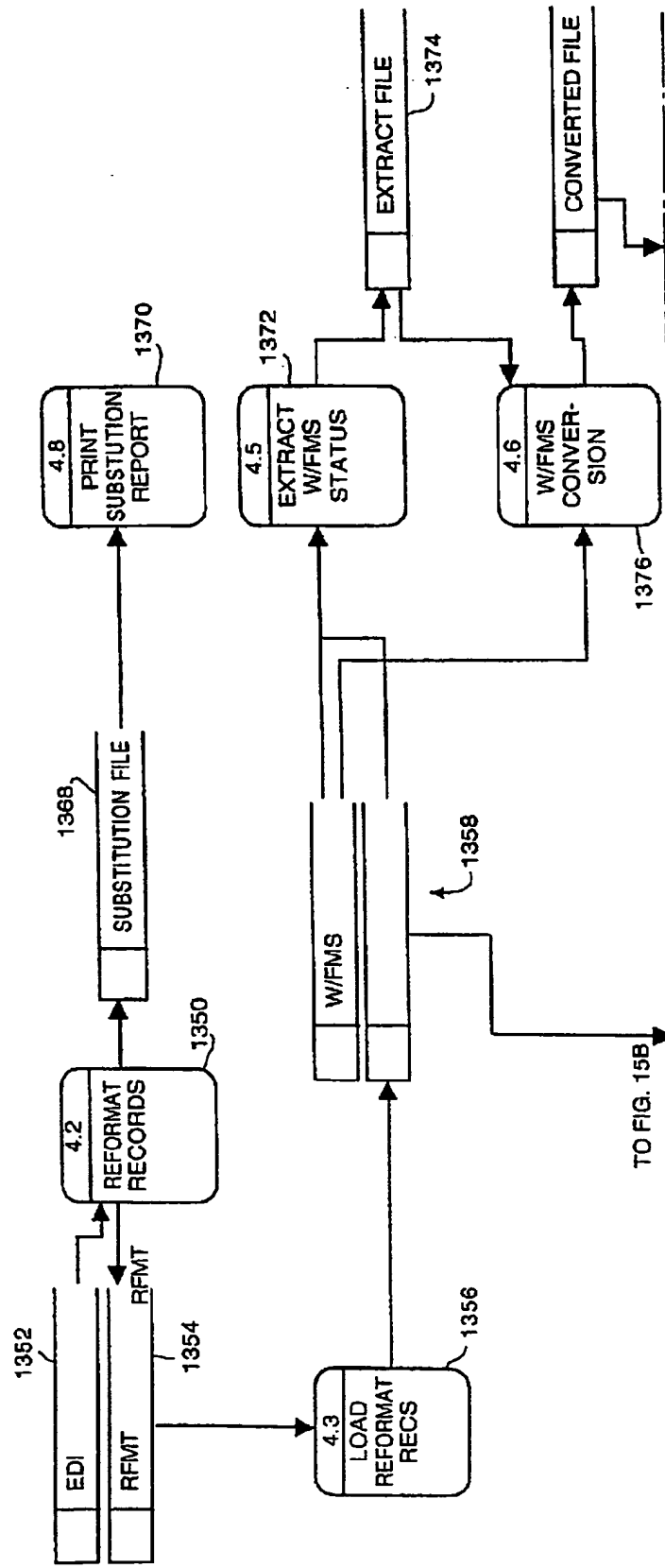


15/30



16/30

Fig. 15A



17/30

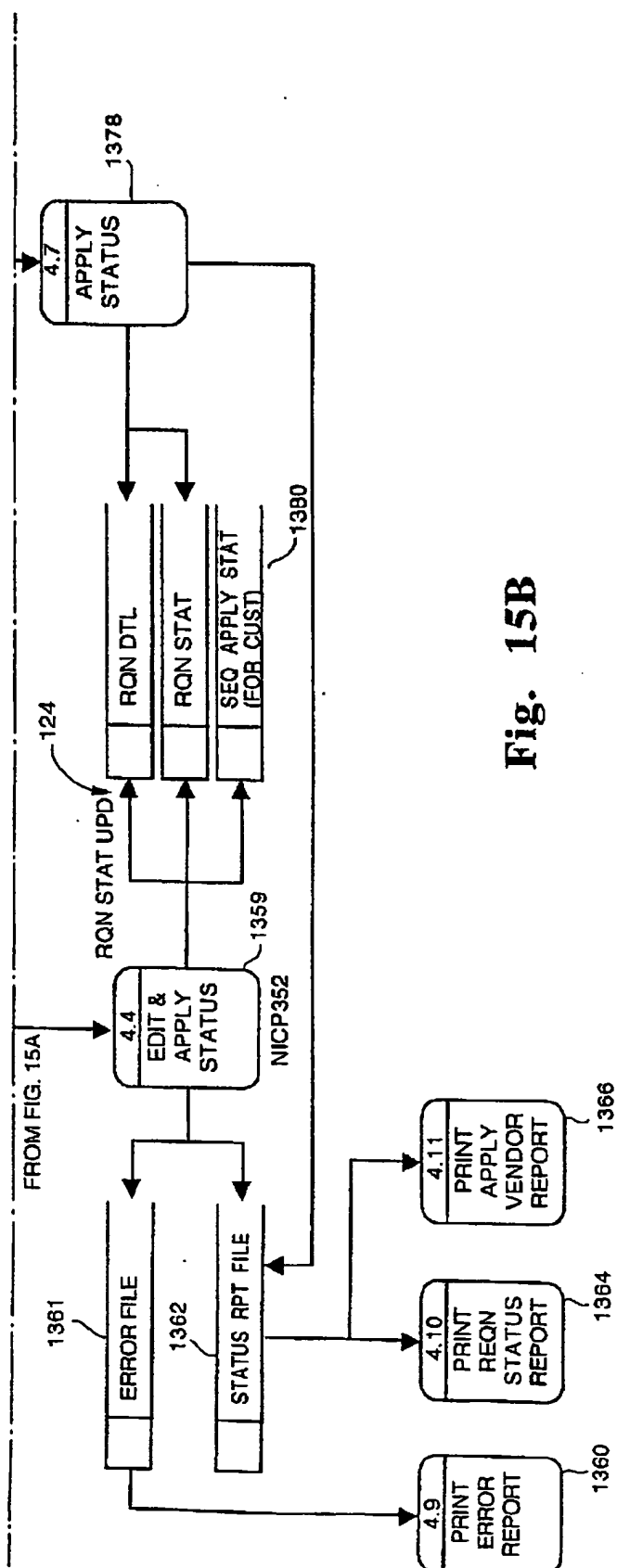
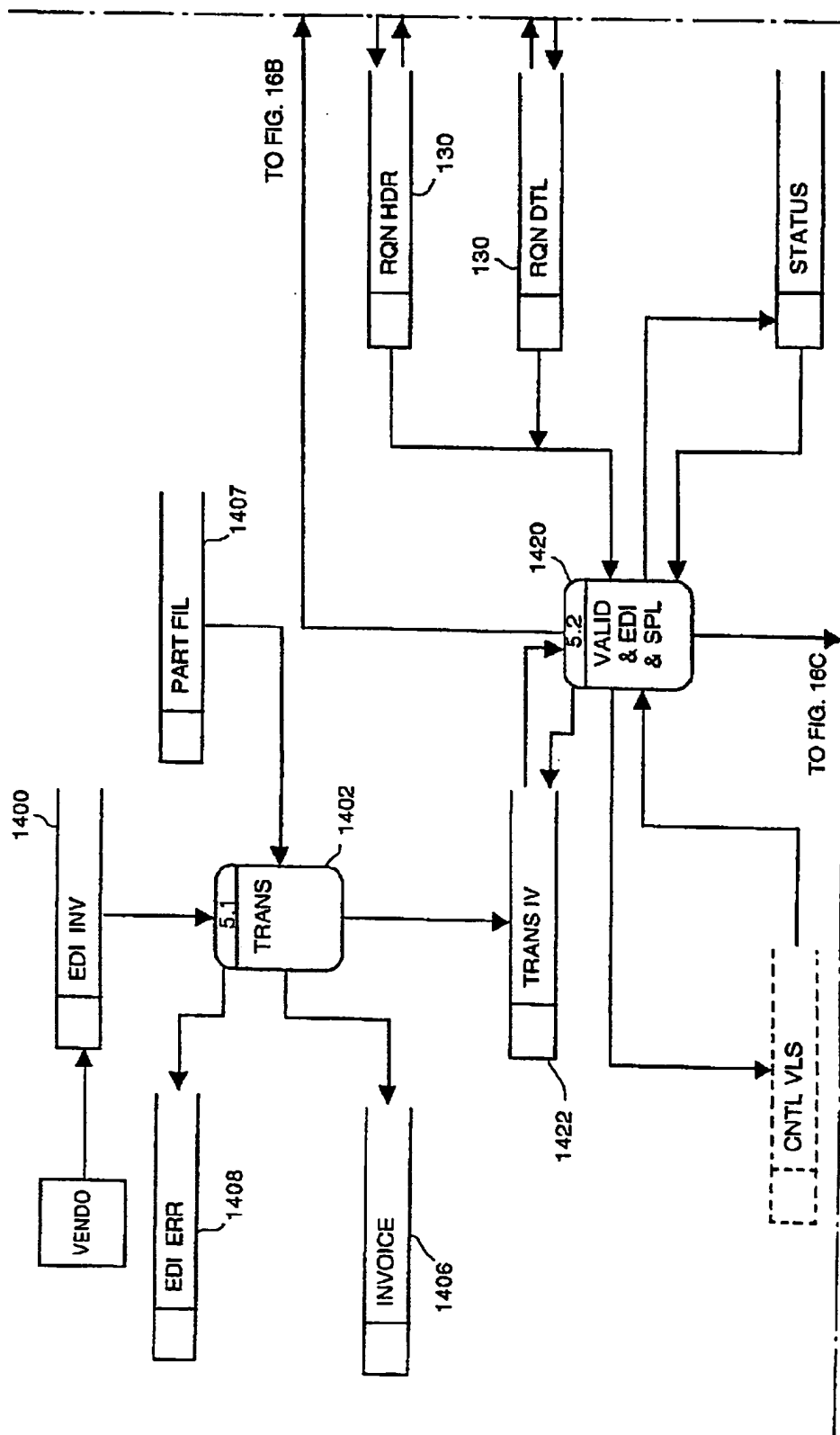


Fig. 15B

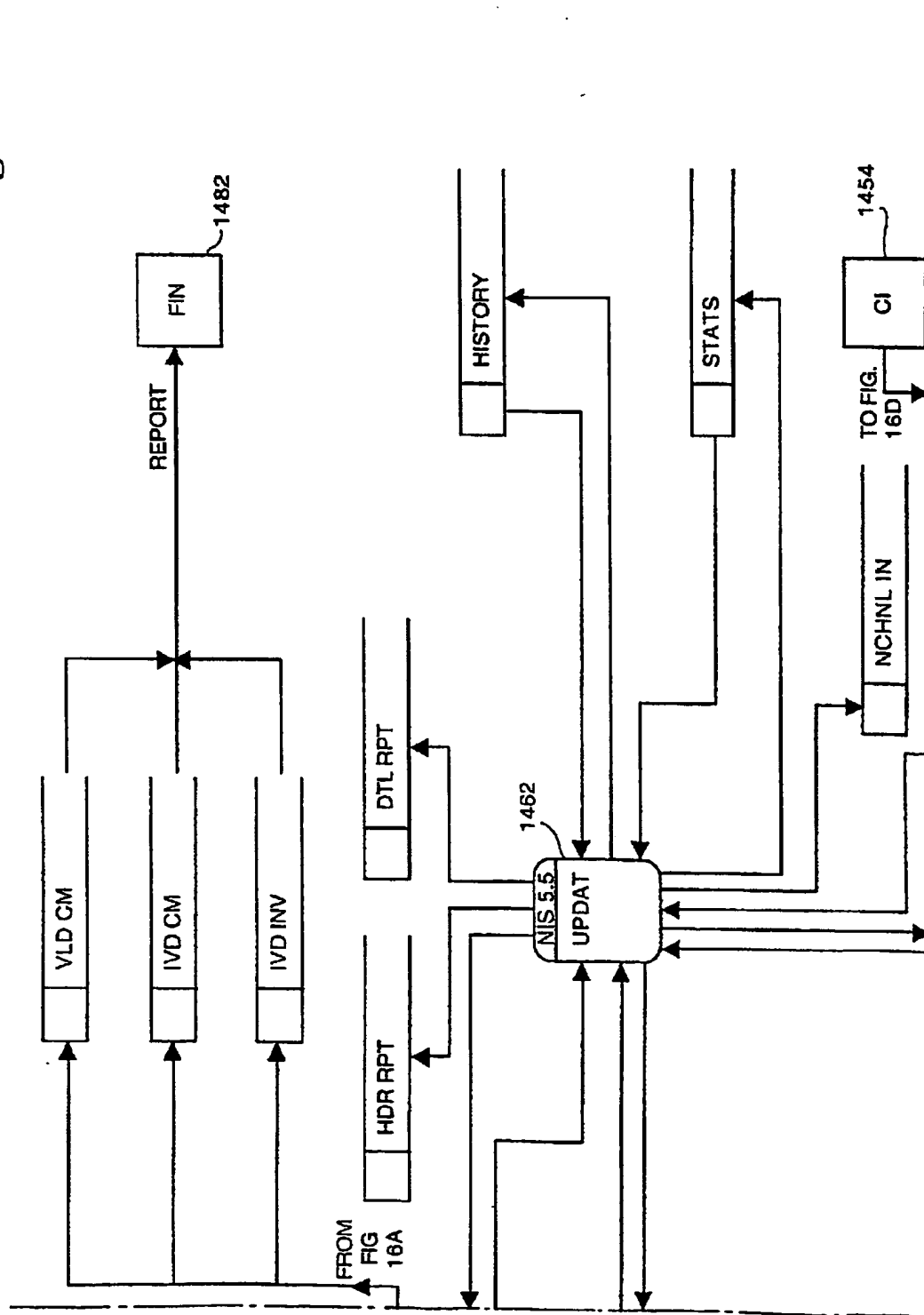
18/30

Fig. 16A

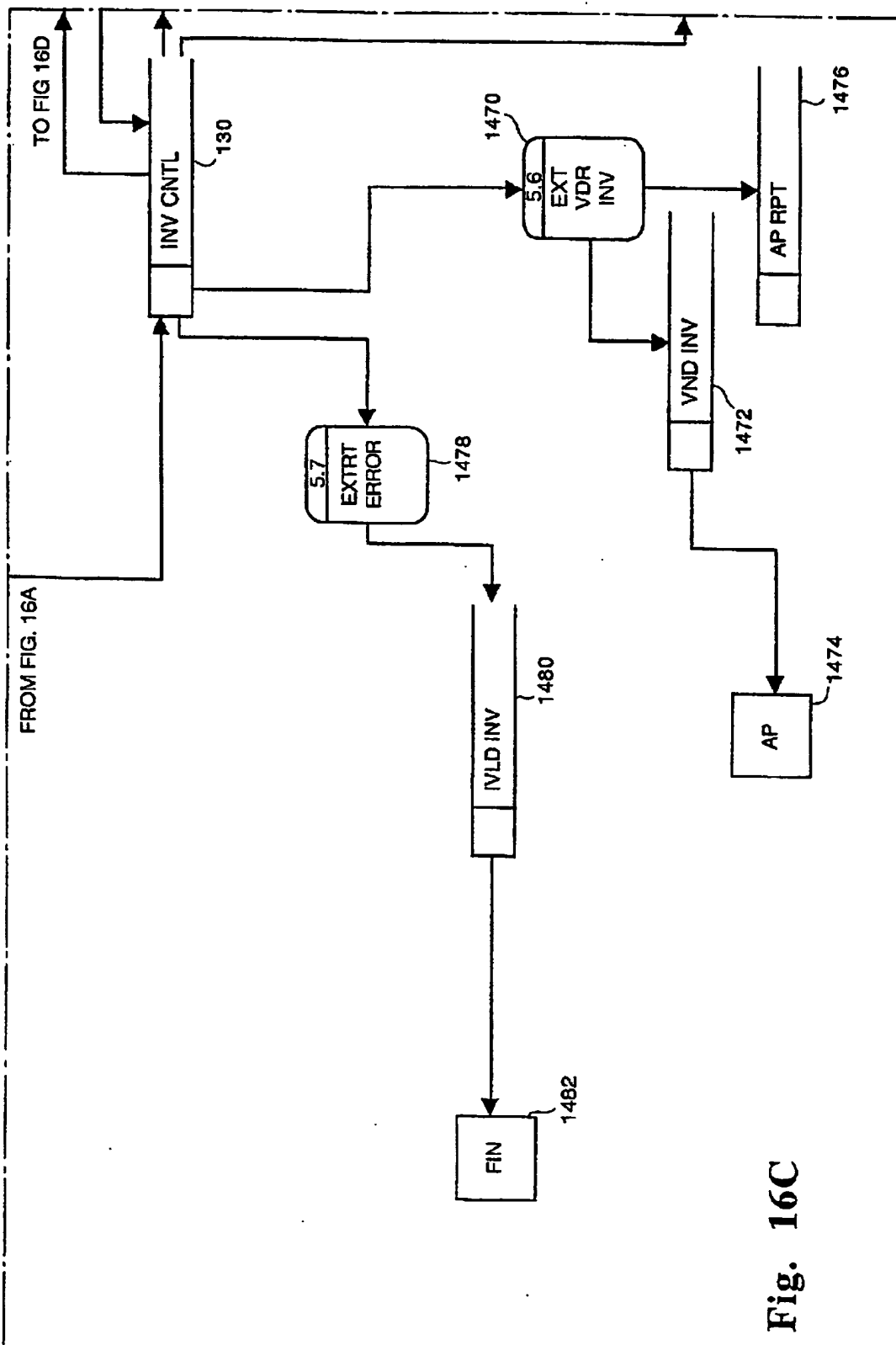


19/30

Fig. 16B



20/30



21/30

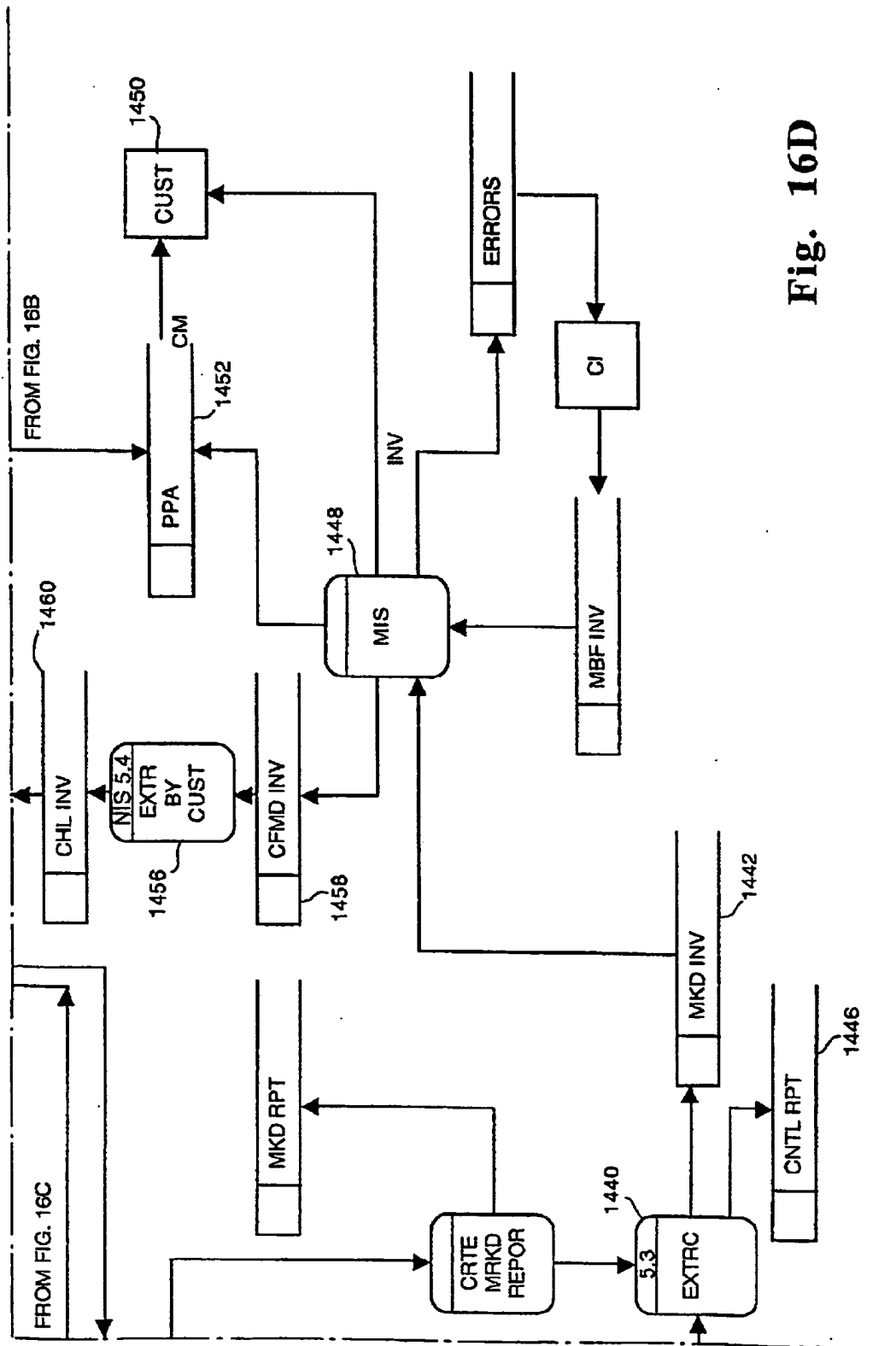


Fig. 16D

22/30

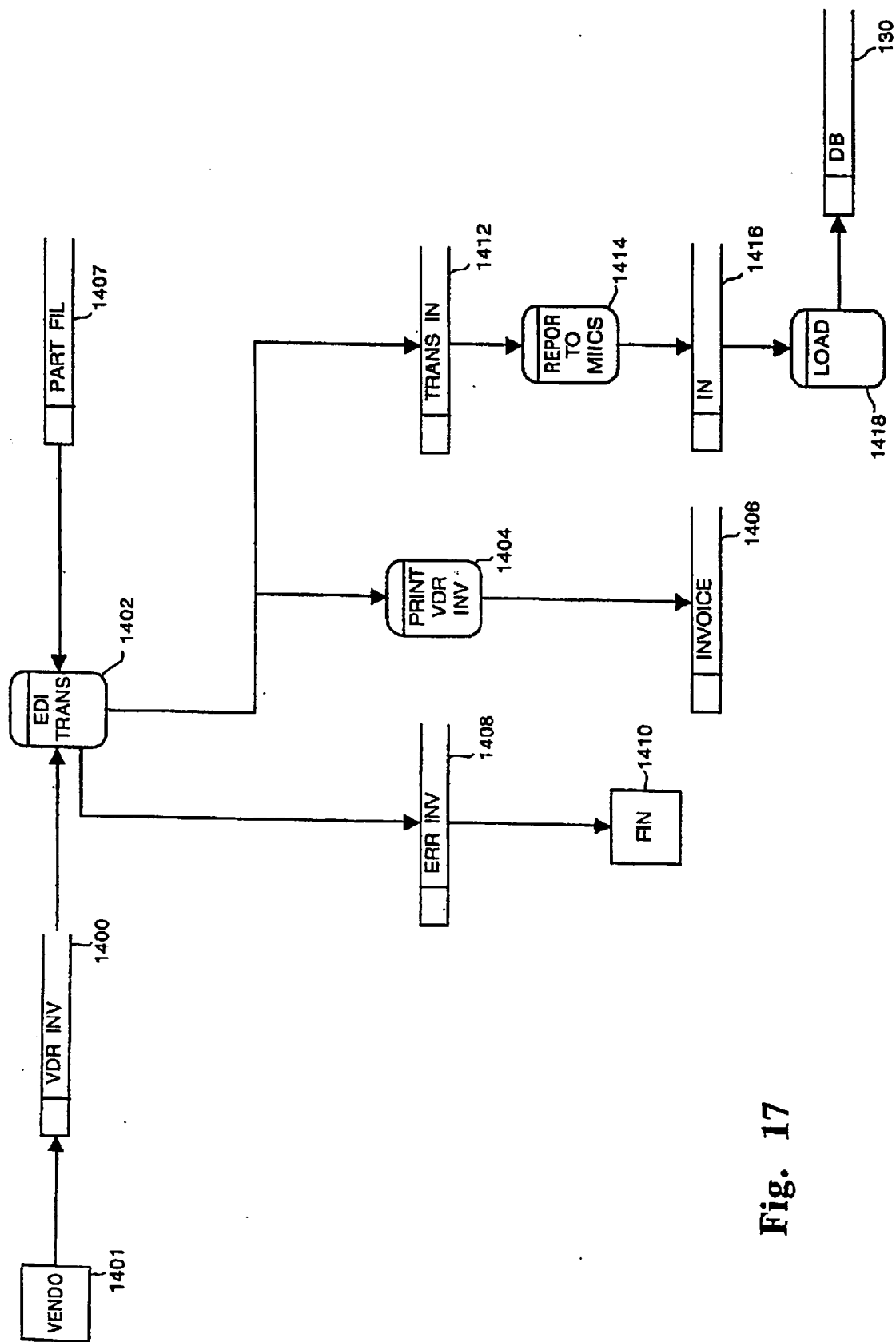
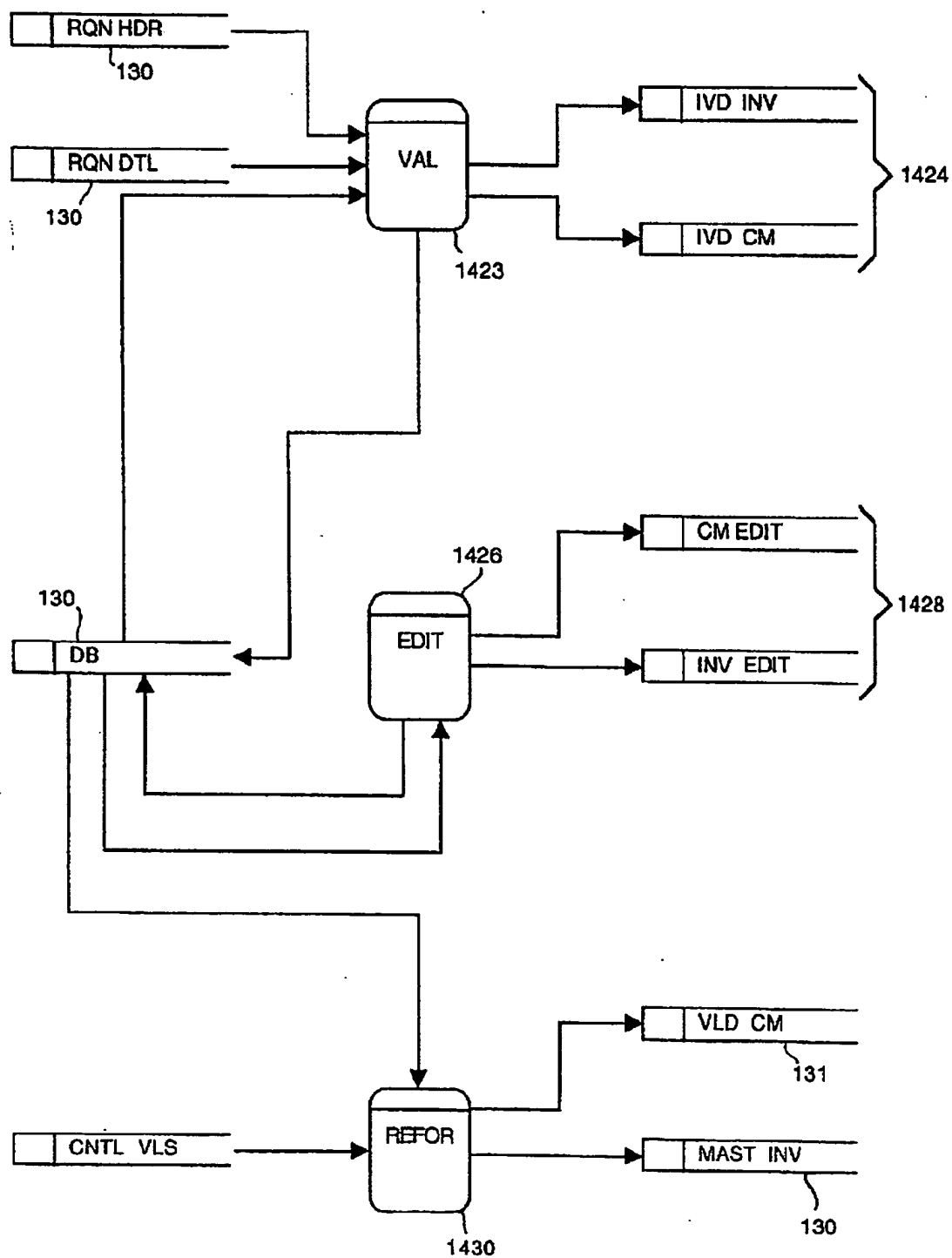


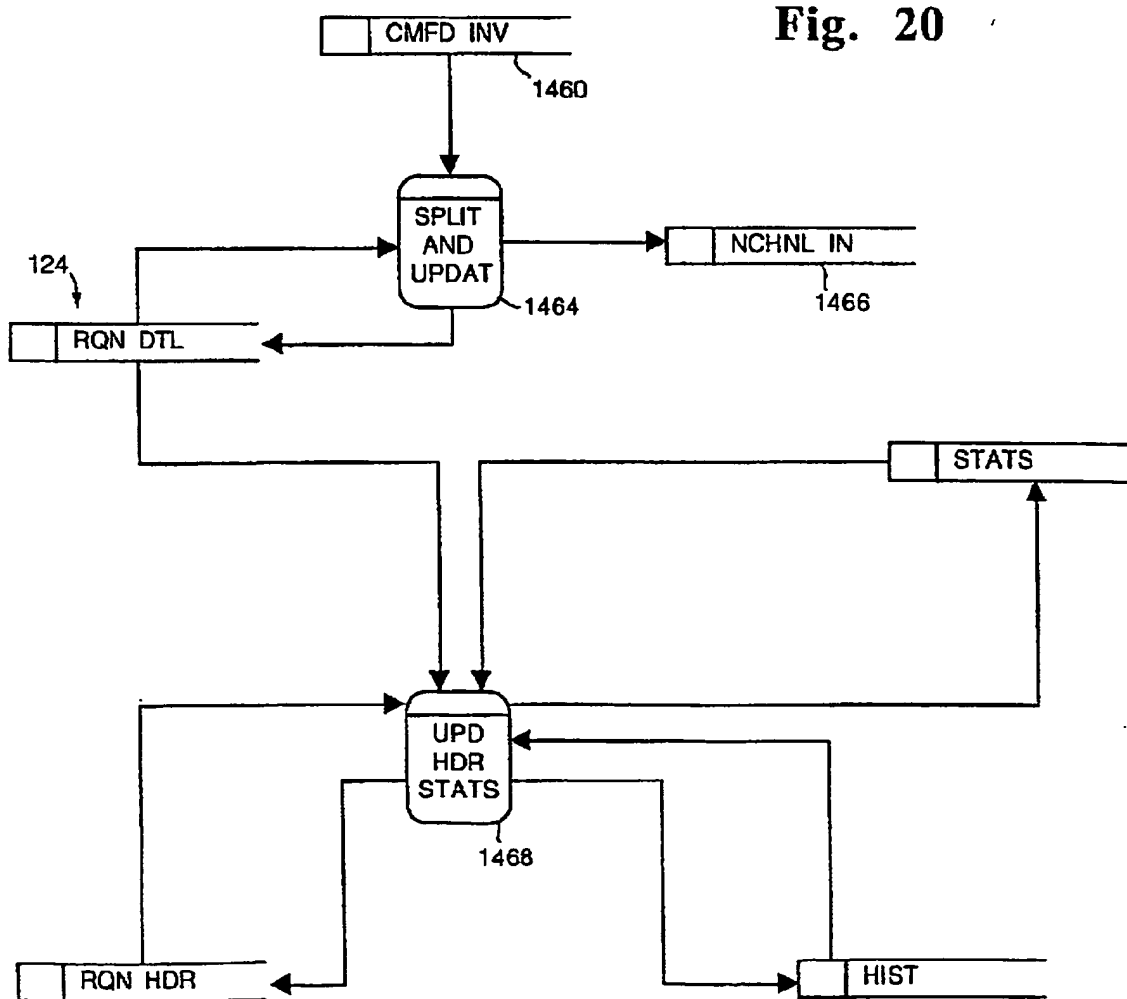
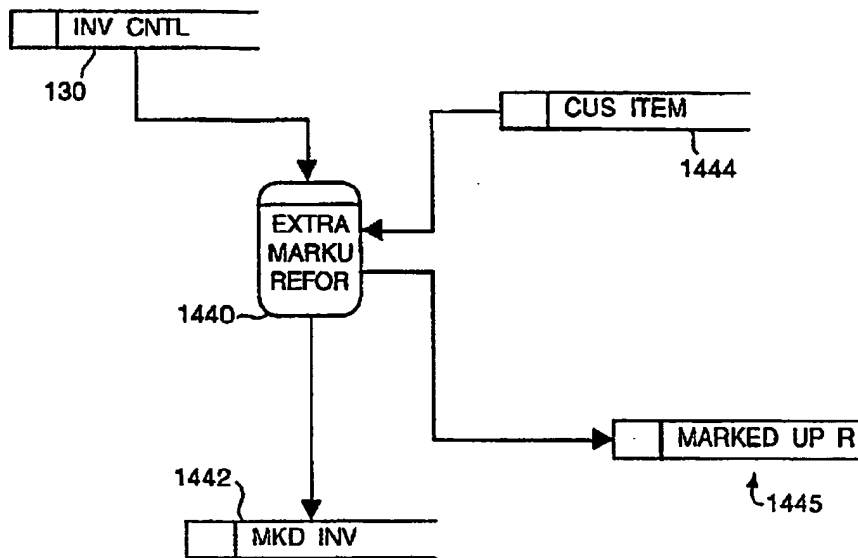
Fig. 17

23/30

**Fig. 18**

SUBSTITUTE SHEET (RULE 26)

24/30



SUBSTITUTE SHEET (RULE 26)

25/30

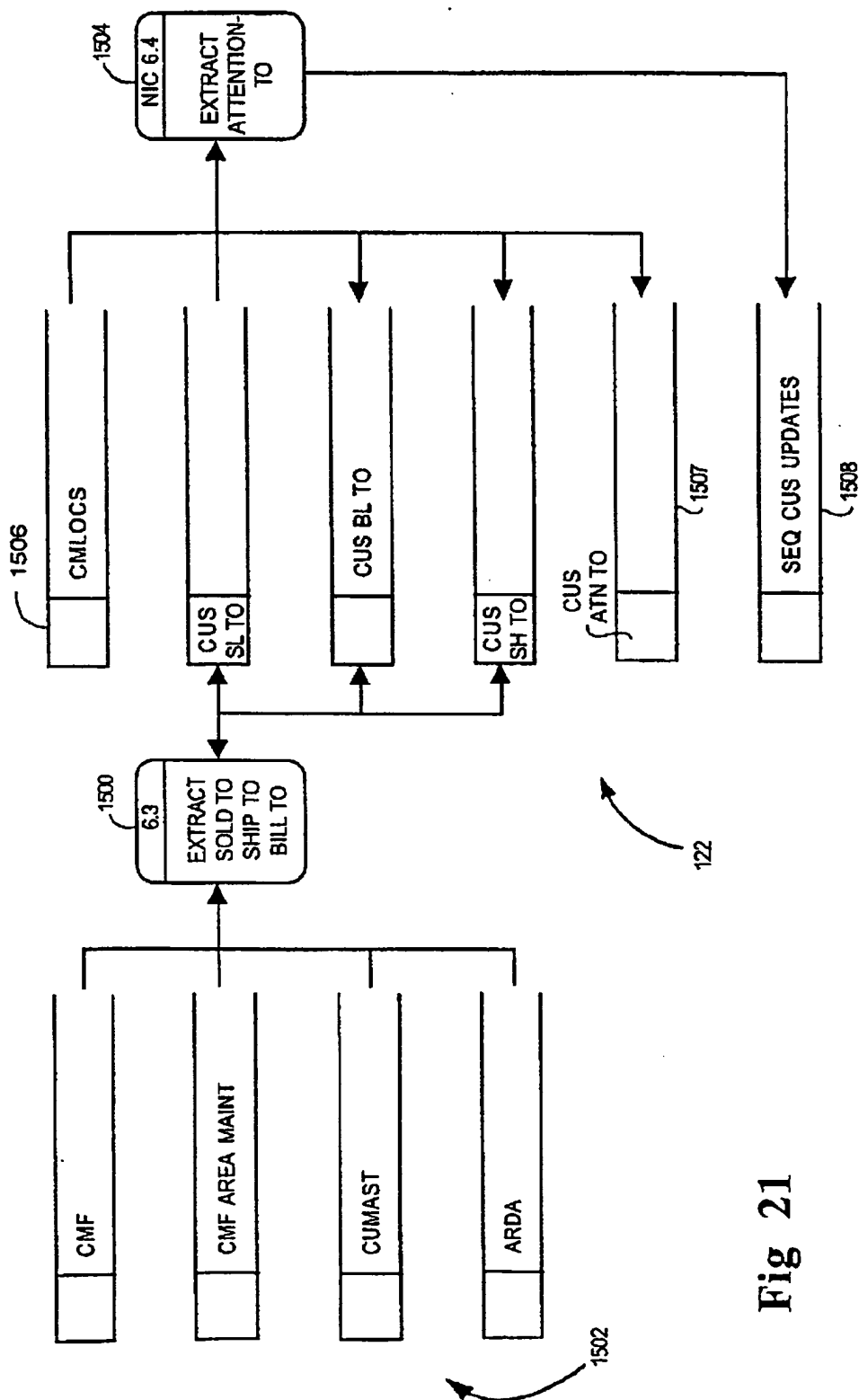
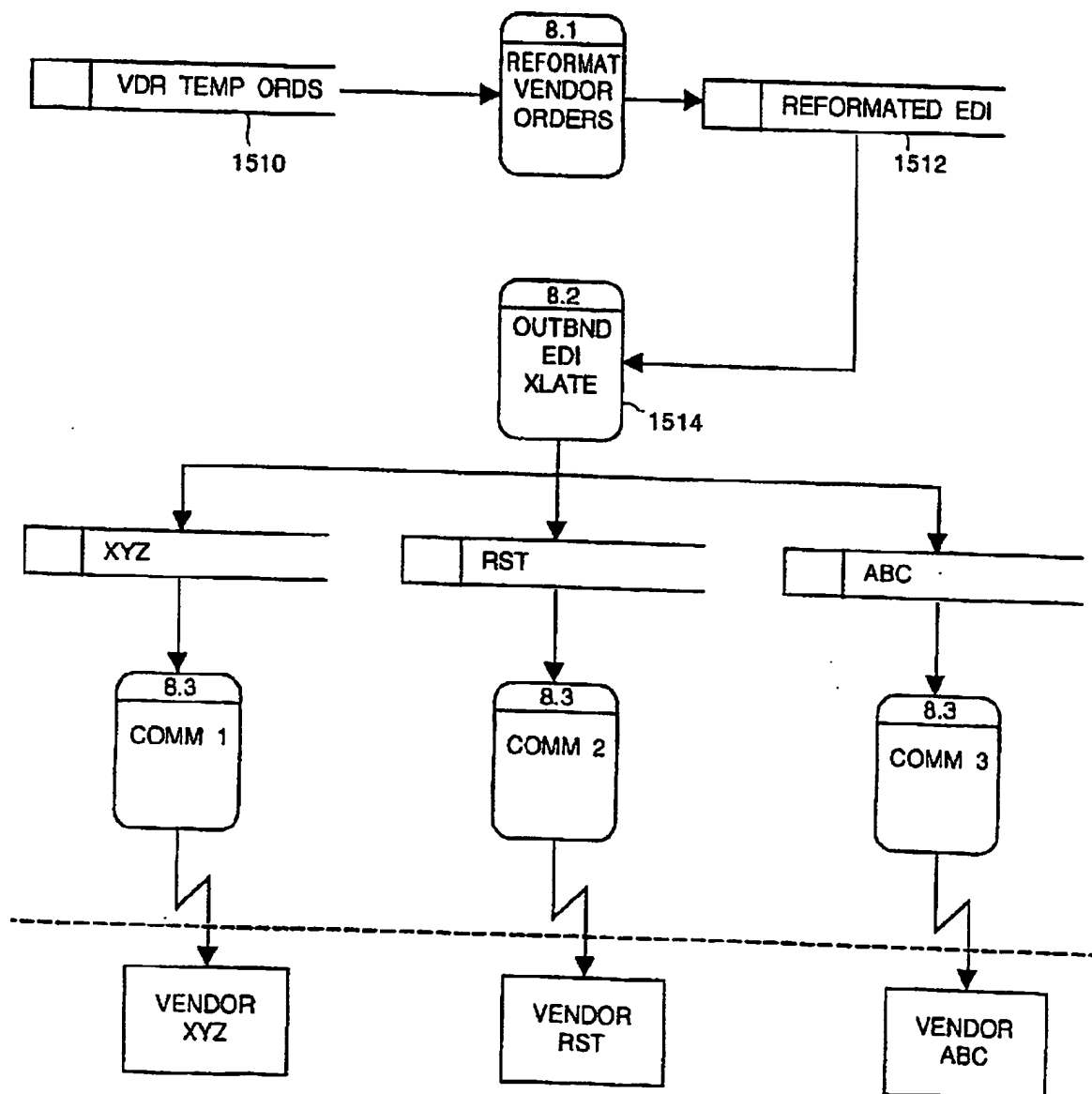


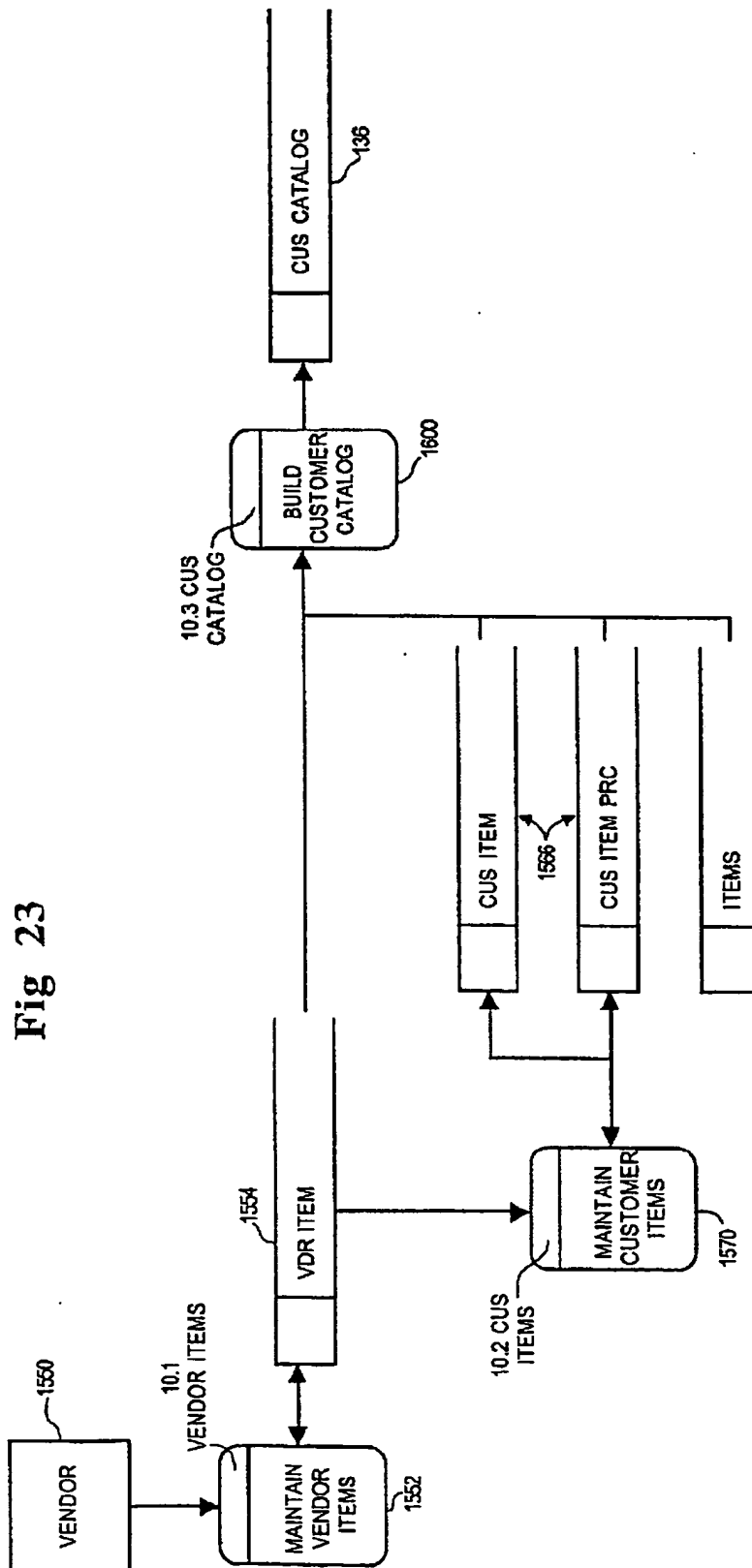
Fig 21

26/30

Fig. 22



27/30



28/30

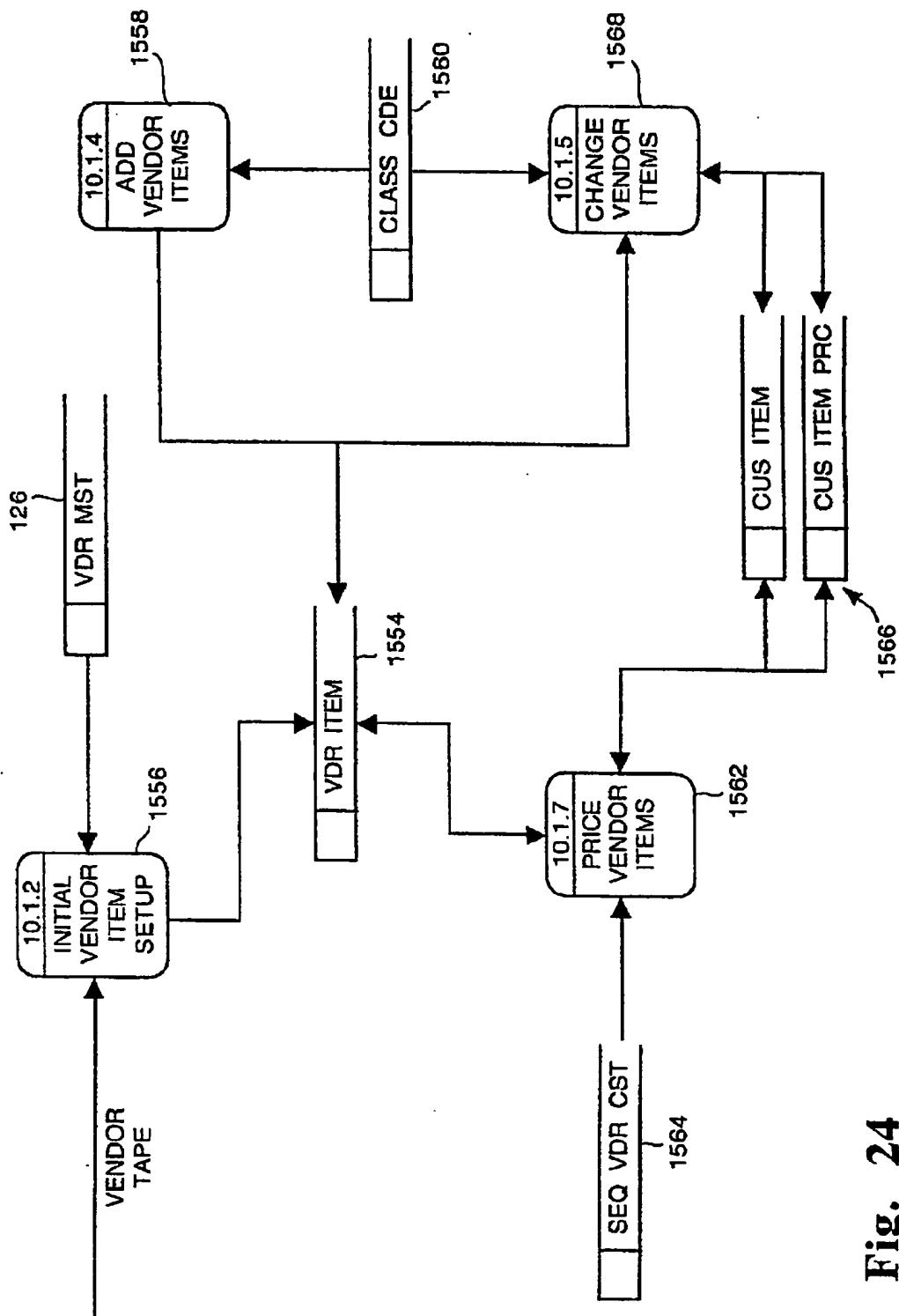
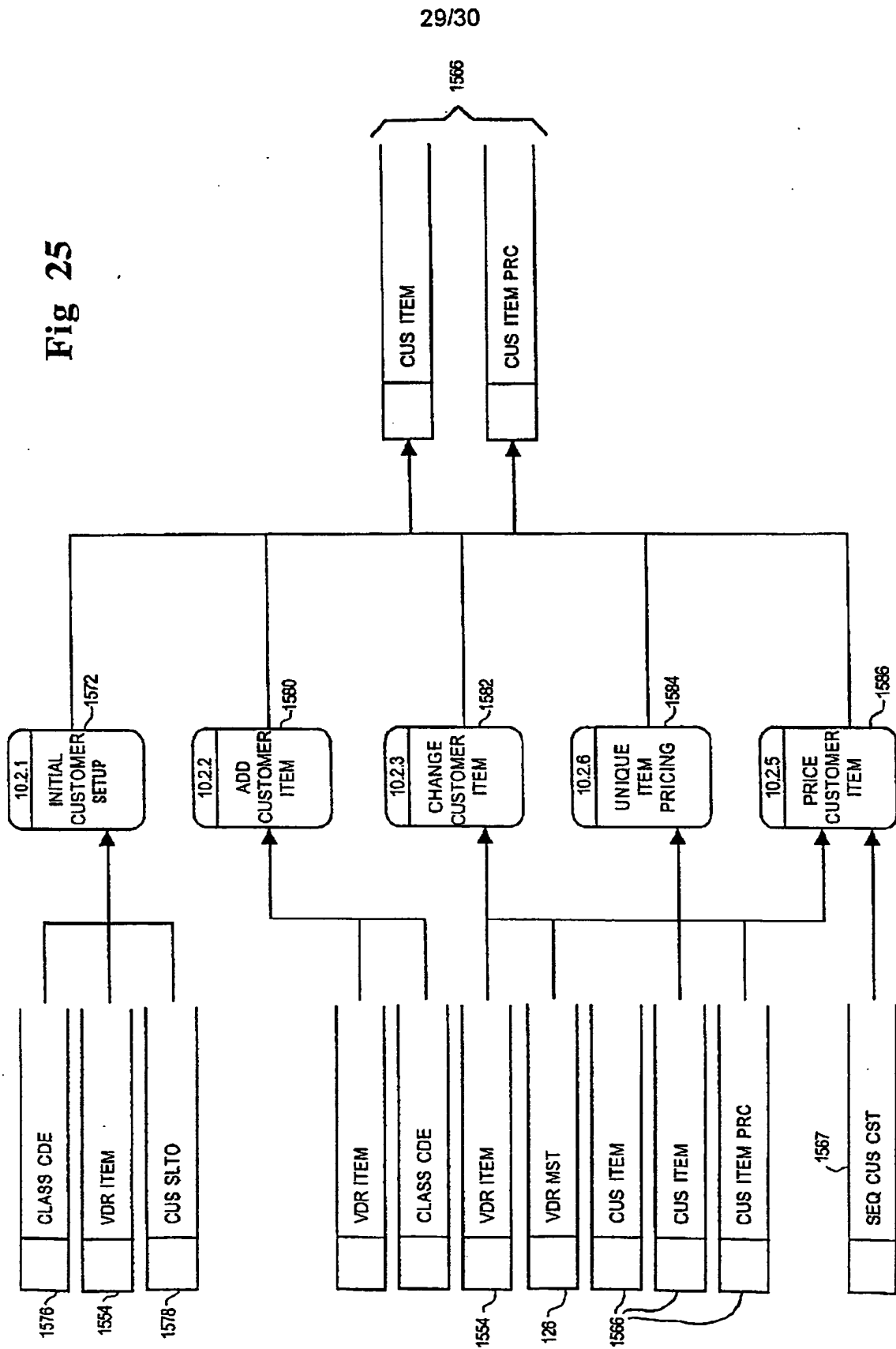


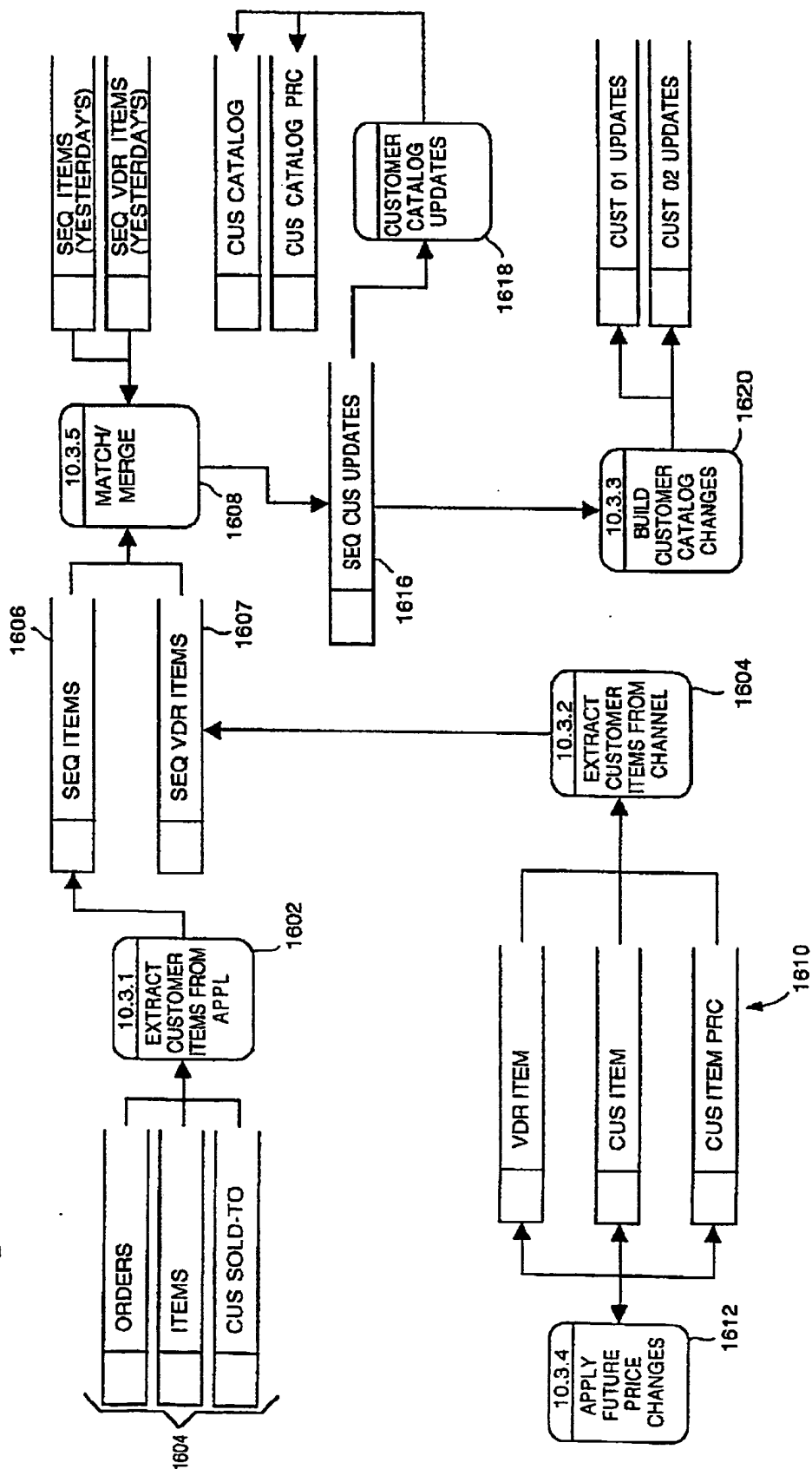
Fig. 24

Fig 25



30/30

Fig. 26



# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US94/05046

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(5) : G06F 15/22, 15/24

US CL : 364/461, 403

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 364/401, 402, 403, 408

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
NONE

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 4,992,940 (DWORKIN) 12 February 1991, the abstract, figs. 1, 4-6, col. 1 line 63 to col. 2 line 41, col. 3 line 48 to col. 4 line 61, col. 8 lines 9-37 and col. 10 lines 46-53.	1-3
A, P	US, A, 5,224,034 (KATZ ET AL) 29 June 1993, abstract.	1-3
A	US, A, 4,975,841 (KEHNEMUYI ET AL) 04 December 1990, abstract.	1-3
A	US, A, 5,204,821 (INUI ET AL) 20 April 1993, abstract.	1-3
A	US, A, 4,984,155 (GEIER ET AL) 08 January 1991, abstract.	1-3

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	** later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be part of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"A" document member of the same patent family
"O" documents referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

11 JUNE 1994

Date of mailing of the international search report

JUN 27 1994

Name and mailing address of the ISA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. N/A

Authorized officer

ROBERT A. WEINHARDT

Telephone No. (703) 305-9780

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US94/05046

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 4,621,325 (NAFTZGER ET AL) 04 November 1986, abstract.	1-3
A	US, A, 4,713,761 (SHARPE ET AL) 15 December 1987, abstract.	1-3
A	US, A, 4,972,318 (BROWN ET AL) 20 November 1990, abstract.	1-3
A	US, A, 5,117,354 (LONG ET AL) 26 May 1992, abstract.	1-3